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REVISED SITE SAFETY AND HEALTH PLAN FOR CHEMICAL AND PHYSICAL SAMPLING OF THE WESTERN CONFINED DREDGE SPOIL DISPOSAL FACILITY NS MAYPORT FL

7/1/2004

TETRA TECH NUS

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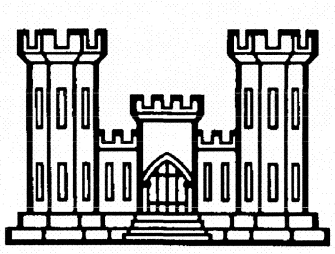
NAVAL STATION
MAYPORT, FLORIDA



Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

July 2004

SITE SAFETY AND HEALTH PLAN
FOR
CHEMICAL AND PHYSICAL SAMPLING
OF THE
WESTERN CONFINED DREDGE SPOIL
DISPOSAL FACILITY

NAVAL STATION
MAYPORT, FLORIDA

Submitted to:
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Submitted by:
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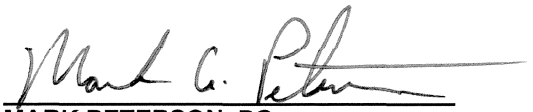
661 Andersen Drive Foster Plaza 7
Pittsburgh, Pennsylvania 15220

CONTRACT NUMBER
DACA65-99-D-0065

JULY 2004

PREPARED UNDER THE SUPERVISION OF:



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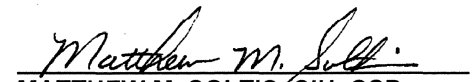

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PITTSBURGH, PENNSYLVANIA

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1.0 INTRODUCTION

This Site Safety and Health Plan (SSHP) provides practices and procedures for Tetra Tech NUS, Inc. (TtNUS) personnel engaged in chemical and physical sampling at the Naval Station in Mayport, Florida (NAVSTA Mayport). Project activities will be conducted at the Western Confined Disposal Facility (WCDF). This work is authorized by the Department of Army Jacksonville District Corps of Engineers under Contract Number DACA65-99-D-0065. This SSHP must be used in conjunction with the TtNUS Health and Safety Guidance Manual. Both of these documents must be present at the site during the performance of site activities. The Guidance Manual provides detailed information pertaining to the SSHP as well as applicable TtNUS Standard Operating Procedures (SOPs). This SSHP and the contents of the Guidance Manual were developed to comply with applicable sections in the following:

- EM 385-1-1, US Army Corps of Engineers Safety and Health Manual
- 29 CFR 1910.120 (OSHA's Hazardous Waste Operations and Emergency Response Standard)
- 29 CFR 1926 (Construction Industry Safety and Health Standards)
- NAVSTA Mayport policies and procedures
- TtNUS Health and Safety Program elements

This information used in this SSHP is the latest available regarding known or suspected chemical contaminants and potential physical hazards associated with the proposed work at the site. The SSHP will be modified if new information becomes available. Changes to the SSHP will be made with the approval of the TtNUS Project Health and Safety Officer (PHSO) and the TtNUS Safety and Health Manager (SHM). Requests for modifications to the SSHP will be directed to the PHSO, who will determine if the changes are necessary. The PHSO will notify the Project Manager (PM), who will notify affected personnel of changes.

1.1 KEY PROJECT PERSONNEL AND ORGANIZATION

This section defines responsibility for site safety and health for TtNUS employees engaged in onsite activities. Each employee is responsible for complying with applicable safety and occupational health requirements, wearing prescribed safety and health equipment, reporting unsafe conditions/activities, preventing avoidable accidents and working in a safe manner.

Personnel assigned to the following positions will exercise the primary responsibility for onsite health and safety. These persons will be the primary point of contact for questions regarding the safety and health procedures and the selected control measures that are to be implemented for onsite activities.

- The TtNUS PM is responsible for the overall direction of health and safety for this project. This includes but is not limited to, the following duties:
  i. Prepares background review - Results from past investigation activities at conducted at the WCDF at NAVSTA Mayport (pertinent data - peak concentrations/exceedances by site media for each contaminant at each location of the investigation).
  ii. Defines the specific scope of work to be performed.
  iii. Determines the appropriate points of contact at NAVSTA Mayport (i.e., Base Contact, Base Security, Utilities, Emergency notification procedures, closest hospital, Facility Emergency Response capabilities, etc.)
  iv. Obtains site access, not only to the base, but also to files and records that may have some bearing or pertinence pertaining to this project.
- The PHSO is responsible for developing this SSHP in accordance with applicable OSHA regulations. Specific responsibilities include:
  i. Providing information regarding site contaminants and physical hazards associated with the site.
  ii. Establishing air monitoring and decontamination procedures.
  iii. Assigning personal protective equipment based on task and potential hazards.
  iv. Determining emergency response procedures and emergency contacts.
  v. Stipulating training requirements and reviewing appropriate training and medical surveillance certificates.
  vi. Providing standard work practices to minimize potential injuries and exposures associated with hazardous waste work.
  vii. Modify this SSHP, as it becomes necessary.

- The TtNUS Field Operations Leader (FOL) is responsible for implementation of the SSHP with the assistance of an appointed SSO. The FOL manages field activities, executes the work plan, and enforces safety procedures as applicable to the work plan.

- The SSO supports site activities by advising the FOL on the aspects of health and safety onsite. The SSO will have all appropriate training and qualifications, and will have at least one year of experience in this role on hazardous waste-related projects. Specific duties of the SSO include the following:
  i. Coordinating health and safety activities with the FOL.
  ii. Selecting, inspecting, and maintaining personal protective equipment.
  iii. Establishing work zones and control points in areas of operation.

iv. Implementing air monitoring program for onsite activities.

v. Verifying training and medical clearance of onsite personnel status in relation to site activities.

vi. Implementing Hazard Communication, Respiratory Protection, and other associated health and safety programs as they may apply to site activities..

vii. Coordinating Tetra Tech NUS, Inc. activities with the Facility Emergency Services.

viii. Providing site-specific training for onsite personnel.

ix. Investigating accidents and injuries (see Attachment I - Illness/Injury Procedure and Report Form)

x. Providing input to the PHSO regarding the need to modify, this SSHP, or applicable health and safety associated documents as per site-specific requirements.

xi. Conduct daily site surveys of operational and applicable inactive work zones. The purpose of the site surveys will be to identify safety and health deficiencies as it pertains to active operations. Deficiencies noted will be recorded and corrective measures and schedule for correction shall be assigned. The SSO will follow up to insure corrections are made as and when directed. Site surveys in inactive areas will be conducted prior to committing personnel or resources to identify, remove, or barricade potential physical and/or natural hazards.

- Compliance with the requirements stipulated in this SSHP is monitored by the SSO and coordinated through the PHSO and the TtNUS SHM.

Note: In some cases one person may be designated responsibilities for more than one position. For example, at NAVSTA Mayport, the FOL may also be responsible for SSO duties. This action will be performed only as credentials or experience permits.

1.2 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

Site Name: Naval Station Mayport, Florida **Base Contact:** Diane Lancaster **Phone Number:** (904) 270-6730 Ext. 208

USACE Engineer in Charge: Bill Neimes **Phone Number:** (904) 232-3484

Scheduled Activities: This activity is chemical and physical sampling of sub-surface soils. Further detail on this and other site tasks can be found in Section 4 of this SSHP.

Dates of scheduled activities: Site activities to begin in July 2004 .

Project Team:

TtNUS Management Personnel:	Discipline/Tasks Assigned:	Phone Number:
Mark Petersen, PG	Project Manager (PM)	(904) 636-6125
Alan Pate	Field Operations Leader (FOL)	(904) 636-6125
TBD	Site Safety Officer (SSO)	
Matthew M. Soltis, CIH, CSP	Safety and Health Manager (SHM)	(412) 921-8912
James K. Laffey	Project Health and Safety Officer (PHSO)	(412) 921-8678

Other Potential TtNUS Project Personnel:

TBD	DPT Contractor	
TBD		
TBD		

Hazard Assessments (for purposes of 29 CFR 1910.132) and SSHP preparation conducted by:

James K. Laffey

2.0 EMERGENCY ACTION PLAN

2.1 INTRODUCTION

This section of the HASP is part of a preplanning effort to direct and guide field personnel in the event of an emergency. The first measure in accomplishing this objective is to define, what is and is not, an emergency.

An emergency as defined in 1910.120 is:

> *An occurrence or condition that can or has resulted in an uncontrolled release of a hazardous substance or potential safety hazard (i.e., fire, explosion, chemical exposure) associated with that release.*

An incidental release as defined in 1910.120 is:

> *The releases of a hazardous substance that can be absorbed, neutralized, or otherwise controlled and will not result in potential safety hazard (i.e., fire, explosion, chemical exposure) are not considered emergency responses.*

Based on the above definitions, TtNUS will provide through on-site resources initial incident response measures for incidents such as:

- Initial fire-fighting support and prevention
- Initial spill control and containment measures and prevention
- Removal of personnel from emergency situations
- Provision of initial medical support for injury/illness requiring only first-aid level support
- Provision of site control and security measures as necessary

Incidents and conditions above this level of participation are and will be considered emergencies. These events are considered beyond the capabilities of field personnel and above available resources to provide emergency response safely. The emergency response agencies listed in this plan are capable of providing the most effective response, and as such, will be designated as the primary responders in the event of an emergency. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time.

This Emergency Action Plan conforms to the requirements of 29 CFR 1910.38(a), as allowed in 29 CFR 1910.120(l)(1)(ii).

The FOL and/or the SSO are responsible for this plans implementation. Any and all questions should be directed to them for clarification.

2.2 PRE-EMERGENCY PLANNING – RECOGNITION AND PREVENTION

The primary focus of this section is the ability to recognize and control factors that could contribute to an incident/emergency situation and/or condition. The initial hazard assessment indicates situations and/or conditions recognized that could lead to an incident/emergency situation include

Physical Hazards

- DPT Drilling activities
  - Struck by – Movement in and around operating equipment; pressurized systems
  - Contact with overhead or underground energized sources

See Section 6.2 Physical Hazards, Table 5-1 Soil Boring, and Section 9.0 Site Control for identified control measures to minimize or eliminate these hazards.

Chemical Hazards

- Immunoassay Kits – Test and Extraction Kits

See Section 6.1 Chemical Hazards and Tables 5-1 Mobilization/Demobilization, soil boring – soil sampling for identified control measures to minimize or eliminate these hazards.

Natural Hazards during

- Mobilization/Demobilization
- Removal of vegetation
- Surveying
  - Snakes/Snake bite
  - Alligators

See Section 6.3 Natural Hazards and Tables 5-1 Mobilization/Demobilization, soil boring – soil sampling, and surveying for identified control measures to minimize or eliminate these hazards.

2.2.1 General Practices – Pre-Emergency Planning

In an effort to minimize and eliminate these potential emergency situations, emergency planning activities associated with this project, the following responsibilities are assigned to the FOL and/or the SSO:

- The FOL and/or the SSO will coordinate response actions with NAVSTA Mayport Emergency Services personnel to ensure that TtNUS emergency action activities are compatible with facility emergency response procedures. This will serve as the initial review of the Emergency Action Plan.

- Establish and maintain information at the project staging area (Support Zone) for easy access in the event of an emergency. This information includes the following:
  - Chemical Inventory (for substances used on-site), with Material Safety Data Sheets.
  - On-site personnel medical records (medical data sheets).
  - A logbook identifying personnel on-site each day.
  - Emergency notification phone numbers and maps indicating the route to the hospital in site vehicles.

Note: It is the responsibility of the TtNUS FOL and/or the SSO to ensure that this information is available and present at the site.

- **Identifying a chain of command for emergency action** – The FOL and/or the SSO will serve as Incident Commander in the event of an on-site incident. He or she will remain in this position unless the incident progresses to an emergency situation. Once emergency response crews arrive he or she will relinquish command to the responding agency.

- **Educating site workers** - Educating site workers to the potential emergency situations that may exist and the associated control measures will be critical in early recognition and prevention. This will be accomplished through
  - Site specific training
  - Use and application of the Safe Work Permit System (See Section 10.2)
  - Daily Tool Box Meetings – Conducted to issue Safe Work Permits or to discuss information as it may pertain to on-site evaluations of work areas or operations.
  - Previewing work areas to identify, barricade, or remove physical hazards where identified.

- **Survey Work Areas before committing personnel and resources** - Identify, remove, and/or barricade physical hazards within the estimated work area.
  - Select the most favorable approach route to the sample location.
  - Inspect remote sample locations for signs of natural hazards (i.e., heavy brush – ticks; snakes, etc.).
  - Consider in selecting the route, the level of clearing required and how that vegetation will be removed.

- A characteristic seen in other dredge spoils containment areas are soft spots and sometimes sink holes. Making movement of equipment and personnel difficult and sometimes hazardous.

It should be noted that the soil borings will be conducted in remote unmaintained areas. Natural hazards including snakes, potentially alligators, insect nesting areas are considered to be prevalent. In addition, based on the amount of rainfall some of the containment structure may have accumulated/standing water.

- **Provide the necessary emergency action equipment** to control potential emergencies (i.e., safety cans for flammable liquid storage, spill containment equipment, PPE, and emergency equipment such as portable fire extinguishers).

- **Evaluate operations** to ensure that necessary measures are taken to control and/or minimize the impact of emergency situations/conditions. This includes actions such as, but not limited to, securing the necessary permits and clearances such as Utility and Excavation Clearances provided by the Base and Sunshine State One-Call of Florida; Ensuring equipment and resources are at the ready for response to incidental measures; insuring personnel are adequately trained in the provisions of this HASP and this Emergency Action Plan; insuring control measures specified within Table 5-1 and the Safe Work Permits are being incorporated into the applicable tasks. As part of this daily site survey, any safety and health deficiencies noted will be assigned to a person or persons for timely correction. In addition, a schedule for making the correction shall be assigned. Deficiencies considered to represent the potential for a significant hazard will be corrected immediately. The SSO is responsible for performing follow up evaluations to ensure that they have been corrected to his/her satisfaction.

Utilities within the WCDF are not anticipated. However, the protocol will be strictly adhered to avoid any associated hazards.

Field Crew shall:

- Identify, remove, or barricade physical hazards within the estimated work area identified by the FOL and/or the SSO.
- Follow the guidelines for control of emergency conditions
- Report any potential emergency situation to the FOL and/or the SHSO.

2.3 SAFE DISTANCES/PLACES OF REFUGE/EMERGENCY ALERTING

TtNUS personnel will be working in close proximity to each other at NAVSTA Mayport. As a result, hand signals, voice commands, and line of site communication will be sufficient to alert site personnel of an emergency. External Communication will be accomplished using two way radios and cellular phones.

In the event of an incident, personnel will engage identified resources necessary to prevent the condition/situation from becoming an emergency.

In the event these initial response measures cannot control the incident personnel will undertake the following measures:

- The FOL and/or the SSO will order the evacuation of non-essential personnel to identified safe places of refuge and secure the immediate area.

- The FOL and/or the SSO will notify emergency services
  - Give the emergency operator the location of the emergency and a brief description of what has occurred.
  - Stay on the phone and follow the instructions given by the operator.
  - The appropriate agency will be notified and dispatched.

- Field personnel will provide perimeter security of the work area until emergency services arrive.

- Once emergency services arrive, TtNUS and subcontractor personnel will report to the designated safe place of refuge. The FOL and/or the SSO shall select the assembly point based on site-specific conditions. However, tentatively the safe place of refuge will be the entry way into the containment cell. Based on the terrain and the amount of vegetation this is easiest and clearest route of travel.

As soon as possible the USACE contact must be informed of any incident or accident that requires medical attention.

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical services personnel. This information is listed on Medical Data Sheets filed onsite. If an exposure to hazardous materials has occurred, provide hazard information from Table 6-1 to medical service personnel.

2.3.1 Critical Operations

There are no operations being conducted under this scope of work that are considered critical and would require an individual or individuals to man during an emergency. Therefore in the event of an emergency all personnel will cease all operations and report to the safe place of refuge.

2.4 DECONTAMINATION PROCEDURES/EMERGENCY MEDICAL TREATMENT

During an evacuation, decontamination procedures will be performed only if doing so does not further jeopardize the welfare of site workers. However, it is unlikely that an emergency would occur which would require workers to evacuate the site without first performing decontamination procedures. Decontamination of medical emergencies will proceed in the following manner.

2.4.1 Non-Life Threatening Medical Incident (Bruises, Cuts, Scrapes, Etc.)

The area of clothing or suit penetration will be isolated from the decontamination procedure by removing applicable protective garments or clothing surrounding the area of the injury and applying a light gauze wrap. If decontamination procedures will be conducted the gauze will be covered with a plastic cover to prevent water saturation during decontamination. Decontamination for unaffected areas will proceed as per Table 5-1 of this HASP.

2.4.2 Life Threatening

- Engage Emergency Notification Sequence
- Notify off-site response agencies.
- If it will not endanger the injured individual (i.e., spinal cord injury, etc.) remove any outer PPE. Removal may require the use of bandage scissors to remove the outer garments.
- Begin life saving techniques as appropriate (CPR, cooling or warming regimens, etc.).
- Cover the injured in a blanket to prevent the onset of shock.
- Follow instructions provided in Attachment I and Figure 2-1.

2.4.3 Emergency Medical Treatment

Tetra Tech NUS and subcontractor personnel are only permitted to provide treatment to the level of their First-Aid Training. It should also be noted all first aid shall be administered voluntarily. Provisions for medical treatment will be available within 5-minutes travel time or two persons of the field crew will be trained in First Aid and CPR as well as provisions within the Bloodborne Pathogen Standard 29 CFR 1910.1030. In accordance with EM 385-1-1 03.A.02.a., it has been determined that access to medical services (the on-base medical clinic) is within a 5-minute travel time and, therefore, having personnel trained in First-Aid/CPR present on the field team will not be required for this operation.

FIGURE 2-1
EMERGENCY RESPONSE PROTOCOL

The purpose of this protocol is to provide guidance for the medical management of exposure situations.

In the event of a personnel exposure to a hazardous substance or agent:

- Rescue, when necessary, employing proper equipment and methods.
- Give attention to emergency health problems -- breathing, cardiac function, bleeding, and shock.
- Transfer the victim to the medical facility designated in this SSHP by suitable and appropriate conveyance (i.e. ambulance for serious events)
- Obtain as much exposure history as possible (a Potential Exposure report is attached).
- If the exposed person is a Tetra Tech NUS employee, call the medical facility and advise them that the patient(s) is/are being sent and that they can anticipate a call from the WorkCare physician. WorkCare will contact the medical facility and request specific testing which may be appropriate. The care of the victim will be monitored by WorkCare physicians. Site officers and personnel should not attempt to get this information, as this activity leads to confusion and misunderstanding.
- Call WorkCare at 1-800-455-6155 (enter Ext. 109), or follow the voice prompt for after hours and weekend notification, and be prepared to provide:
  - Any known information about the nature of the exposure.
  - As much of the exposure history as was feasible to determine in the time allowed.
  - Name and phone number of the medical facility to which the victim(s) has/have been taken.
  - Name(s) of the exposed Tetra Tech NUS, Inc. employee(s).
  - Name and phone number of an informed site officer who will be responsible for further investigations.
  - Fax appropriate information (e.g., MSDS) to WorkCare at (714) 456-2154.
- Contact Corporate Health and Safety Department (Matt Soltis) at 1-800-245-2730.

As environmental data is gathered and the exposure scenario becomes more clearly defined, this information should be forwarded to WorkCare.

WorkCare will compile the results of the data and provide a summary report of the incident. A copy of this report will be placed in each victim's medical file in addition to being distributed to appropriately designated company officials.

Each involved worker will receive a letter describing the incident but deleting any personal or individual comments. This generalized summary will be accompanied by a personalized letter describing the individual's findings/results. A copy of the personal letter will be filed in the continuing medical file maintained by WorkCare.

FIGURE 2-1 (continued)
POTENTIAL EXPOSURE REPORT

Name: _____ Date of Exposure: _____

Social Security No.: _____ Age: _____ Sex: _____

Client Contact: _____ Phone No.: _____

Company Name: _____

I. Exposing Agent

Name of Product or Chemicals (if known):_____

_____

Characteristics (if the name is not known)

Solid Liquid Gas Fume Mist Vapor

II. Dose Determinants

What was individual doing?_____

How long did individual work in area before signs/symptoms developed? _____

Was protective gear being used? If yes, what was the PPE? _____

Was there skin contact?_____

Was the exposing agent inhaled?_____

Were other persons exposed? If yes, did they experience symptoms? _____

III. Signs and Symptoms (check off appropriate symptoms)

Immediately With Exposure:

Burning of eyes, nose, or throat
Tearing
Headache
Cough
Shortness of Breath
Chest Tightness / Pressure
Nausea / Vomiting
Dizziness
Weakness

Delayed Symptoms:

Weakness
Nausea / Vomiting
Shortness of Breath
Cough
Loss of Appetite
Abdominal Pain
Headache
Numbness / Tingling

IV. Present Status of Symptoms (check off appropriate symptoms)

Burning of eyes, nose, or throat
Tearing
Headache
Cough
Shortness of Breath
Chest Tightness / Pressure
Cyanosis
Nausea / Vomiting
Dizziness
Weakness
Loss of Appetite
Abdominal Pain
Numbness / Tingling

Have symptoms: (please check off appropriate response and give duration of symptoms)

Improved: _____ Worsened: _____ Remained Unchanged: _____

V. Treatment of Symptoms (check off appropriate response)

None: _ Self-Medicated: _____ Physician Treated: _____

All First-Aid provided will incorporate the following protective measures:

Emergency medical treatment will be initiated under the following guarded restrictions:

- Take the necessary precautions to prevent direct contact with the injured person's body fluids. This may be accomplished through the employment of the following measures:
  - Use surgeons' gloves when handling cuts, abrasions, bites, punctures, etc. or any part of the injured person. The use of safety glasses and surgeons masks is recommended, if there is the potential for uncontrolled spread of body fluids. The PHSO will be immediately notified in event of an injury or when personnel providing emergency first-aid come into contact with body fluids or other potentially infectious tissues.
  - Should Cardio-Pulmonary Resuscitation (CPR) be required, use a CPR Micro-Shield mouthpiece when administering CPR to prevent contact with the injured person's body fluids.

In order to engage these protective measures the FOL shall insure that these items are part of each first-aid kit.

2.4.4 Injury/Illness Reporting

The SSO, upon ensuring care for the injured party, will engage an investigation of the incident to gather as much information as possible. This includes as a minimum answering the questions, "Who?, What?, Where?, When?, Why?, and How?". This information will then be communicated to the PM, the SHM, and to the Contracting Officer (COR). Attachment I, Tetra Tech NUS, Inc. Injury/Illness Procedure; Figure 2-1; and ENG Form 3394 USACE Accident Investigation Report (provided as Attachment II) will be used to accomplish this task. The PM, SHM, and the facility contact will be notified verbally as soon as possible of an incident once it is under control, with appropriate incident reporting documentation provided within 24 hours of the incident. Also, the COR will be notified within 48 hours if the incident results in a recordable injury or illness, any lost time, and/or property damage in excess of $2,000.

Note: One person from the field team will accompany the injured to the on-base medical clinic with his/her medical data sheet, appropriate MSDSs (if applicable), a copy of this HASP, and the incident forms. This person will collect as much information as possible, and transfer that information to the SHM and WorkCare as per the Incident Response Protocol provided in Figure 2-1. All other personnel will engage site control/site security measures.

2.5 EMERGENCY CONTACTS

Prior to performing work at the site, all personnel will be thoroughly briefed on the emergency procedures to be followed in the event of an incident. A mobile/cellular phone shall be available on site. It will be the responsibility of the FOL and/or the SHSO to test or otherwise insure that the signal strength is sufficient to contact emergency services. If it is not then a different provider, two way radio, or other supported means of communication will be utilized. Table 2-1 provides a list of emergency contacts and their corresponding telephone numbers. This table must be posted on site where it is readily available to all site personnel or provided to site personnel. In addition, maps to the hospital shall be posted on site. It is recommended that a sufficient number of copies be provided/maintained in each site vehicle.

TABLE 2-1

EMERGENCY CONTACT REFERENCE
NAVAL STATION MAYPORT, JACKSONVILLE, FLORIDA

AGENCY	TELEPHONE
EMERGENCY	**911**
Fire Department	(904) 270-5333
Base Security	(904) 270-5583 or 5584
Base Medical Clinic (For life threatening emergencies only)	(904) 270-5444
Baptist Medical Center Beaches	(904) 247-2900
Florida Poison Control Center	(800) 222-1222
Chemtrec	(800) 424-9300
National Response Center	(800) 424-8802
Base Safety Department	(904) 270-5218
Site Point of Contact, Diane Lancaster	(904) 270-6730 Ext. 208
Public Works Trouble Desk	(904) 542-2122
USACE Engineer in Charge, Bill Neimes	(904) 232-3484
Project Manager, Mark Peterson, PG	(904) 636-6125
Safety and Health Manager, Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer, James K. Laffey	(412) 921-8678

NOTE: When calling base telephone numbers from a base telephone, dial a zero (0) and the last four digits of the telephone number. For example, to contact the Base Medical Clinic, dial 05444.

2.6 EMERGENCY ROUTE TO HOSPITAL

For **emergency** care only, non-Navy personnel are permitted to go to the Base Medical Center.

Branch Medical Center
NAVSTA Mayport
Mayport, FL 32228

The Base Medical Center should be used for life-threatening emergencies only. It is located in Building 1363 on Massey Avenue. This facility has extended hours which will cover TtNUS working hours.

2.7 PPE AND EMERGENCY EQUIPMENT

First Aid and Medical Treatment

An Industrial approved first-aid kit with surgeon gloves, surgeons mask, safety glasses, CPR Microshield, Oral Thermometer, and eye wash units (or bottles of disposable eyewash solution)

Fire Protection and Prevention

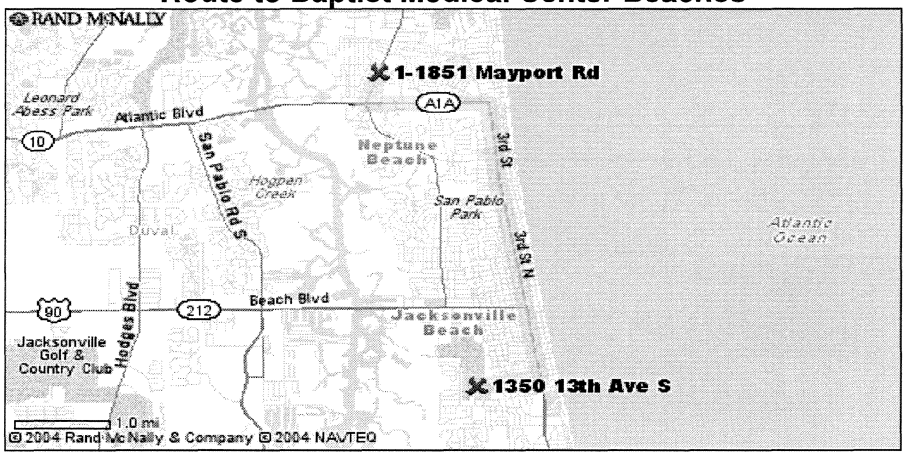
ABC fire extinguishers (strategically placed) will be maintained onsite and shall be immediately available for use in the event of an emergency.

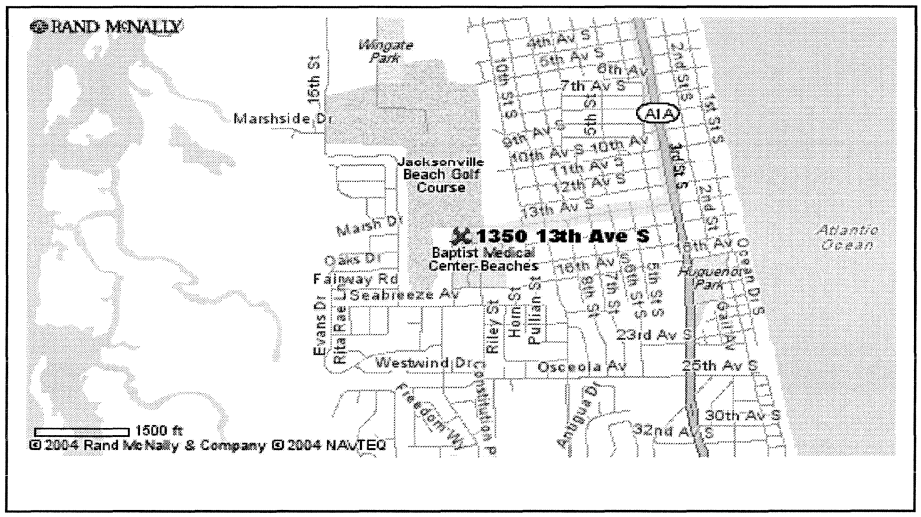
Spill Containment

See Section 9.5 of this SSHP.

Note: The SSO will determine the number of First-Aid kits, fire extinguishers, and spill containment kits that are necessary based on segregated operations.

Figure 2-2
Route to Baptist Medical Center Beaches





For **non-emergency** care services:

Baptist Medical Center Beaches
1350 13th Avenue South
Jacksonville Beach, Florida 32250
(904) 247-2900

1. You are at 1-1851 Mayport Rd, Jacksonville, FL
2. **Go S on SR-A1A** (Mayport Rd) for 0.40 miles
3. **Turn left** onto Atlantic Blvd Frontage Rd (SR-10 E Frontage Rd), 0.1 miles
4. **Enter on ramp to SR-10 E** (SR-A1A S, Atlantic Blvd),0.1 miles
5. Continue onto SR-10 E (SR-A1A S, Atlantic Blvd),1.1 miles
6. Turn right onto SR-A1A S (3rd St),1.2 miles
7. Continue onto SR-A1A S (3rd St N),1.4 miles
8. Continue onto SR-A1A S (3rd St S, 3rd St),0.9 miles
9. Turn right onto 13th Av S (13th Av),0.7 miles
10. You are at 1350 13th Ave S, Jacksonville Beach, FL

3.0 SITE BACKGROUND

3.1 SITE BACKGROUND AND HISTORY

Since its commissioning in December 1942, NAVSTA Mayport has grown to become the third largest fleet concentration area in the United States. NAVSTA Mayport's operational composition is unique, with a busy harbor capable of accommodating 34 ships and an 8,000-foot runway capable of handling any aircraft in the Department of Defense inventory.

With more than 3,400 acres, NAVSTA Mayport is host to more than 70 tenant commands including the aircraft carrier USS John F. Kennedy (CV 67), 21 other naval ships, and 6 Light Airborne Multi-purpose System (LAMPS) Mark III helicopter squadrons. NAVSTA Mayport is also the operational and training headquarters for the SH-60B Seahawk LAMPS MKIII with a primary mission of anti-submarine warfare.

Since 1993, "ocean disposal" has been an environmentally acceptable "clean" dredge material management alternative resulting in a significant reduction in use of the on-base WCDF for dredge material dewatering and disposal. The WCDF has been periodically reactivated whenever the pre-dredged sampling results have shown that the dredge material to be removed will fail the benthic organism toxicity test. Due to dredge material contaminant concentrations, the FY 2003 maintenance dredging program deposited approximately 100,000 cubic yards of new dredge material within the NAVSTA Mayport Eastern Confined Disposal Facility.

3.2 SITE DESCRIPTION

Solid Waste Management Unit (SWMU) 50, the Dredge Spoil Area (DSA), is located in the southwest part of NAVSTA Mayport and is comprised of an eastern and western disposal area. The eastern area is roughly triangular and covers an area of approximately one-quarter square mile. The western disposal area is roughly rectangular and covers an area of approximately one-third square mile. Both areas were constructed in lowland marshes and are encompassed by earthen dikes approximately 25 feet above the surrounding land surface. The tops of the dikes are approximately 15 feet wide.

The placement of dredge material in the eastern holding area occurred from approximately the early 1940s and was discontinued temporarily from 1987 to 1994. The western basin was active from 1973 to 1994. Both dredge disposal areas have reached their maximum capacity and are no longer in use.

4.0 SCOPE OF WORK

This section describes the project tasks that will be performed at NAVSTA Mayport. Additionally, each task has been evaluated and the associated hazards and recommended control measures are listed in Table 5-1 of this SSHP. If new tasks are to be performed at the site, Table 5-1 and this section will be modified accordingly. Specific tasks to be conducted include, but are not necessarily limited to, the following:

- Mobilization and demobilization
- Global Positioning Satellite (GPS) Survey will be used to locate sample points within the grid
- Removal and clearing of Vegetation
- Subsurface soil sampling using Direct-Push Technology (DPT)
- Decontamination of sampling equipment
- Investigative-Derived Waste (IDW) management

The above listing represents a summarization of the tasks as they apply to the scope and application of this SSHP. For more detailed description of the associated tasks refer to the Work Plan (WP). If additional tasks are determined to be necessary, this SSHP will be amended and a hazard evaluation of the additional tasks performed.

5.0 TASKS/HAZARDS/ASSOCIATED CONTROL MEASURES

Table 5-1 of this section is intended to assist project personnel in the recognition of hazards and recommended control measures necessary for each planned task to minimize potential exposure or injuries related to those hazards. The table also assists field team members in determining which personal protective equipment (PPE) and decontamination procedures are to be used as well as appropriate air monitoring techniques and action levels. This table must be updated if the scope of work, contaminants of concern, or pertinent conditions change.

Safe Work Permits will be issued for all site activities (See Section 10.2). The FOL and/or the SSO will use the elements defined in Table 5-1 as the primary reference for completing the Safe Work Permit adding additional information as warranted.

The following text provides a general description of the tasks to be conducted and are the basis for the hazard assessment.

5.1 MOBILIZATION/DEMOBILIZATION

This task includes, but not limited to, the following

- The procurement and shipping of equipment, and materials for the field investigation.
- Review of planning documents (i.e., HASP, Sampling and Analysis Plan, Work Plan, Quality Assurance Plan, etc.)
- Secure, construct, or equip decontamination facilities to support the field activities.
- Secure, construct, or equip IDW storage facilities to support the field activities.

Physical Hazards – The hazard types associated with this task are considered primarily to be Physical hazards – Lifting, strains/sprains, lacerations achieved during unpacking of equipment and during site preparation (i.e., cutting open boxes, lifting equipment, locating sample points).

Chemical Hazards - It is not anticipated that personnel will be exposed to chemical hazards (site contaminants) during this task. The FOL and/or the SHSO must establish the site-specific Hazard Communication Program to address potential hazards of chemicals brought on-site. Of primary concern is the concrete used to set fence posts. See Section 5.0 of the HSGM.

5.2 GPS SURVEYING – SAMPLE LOCATION LAYOUT

This activity is generally non-intrusive in nature. A GPS System will be employed to locate sample grids and sample locations within that grid.

Physical Hazards associated with this task includes

- Slips, Trips, and Falls – This hazard is considered due to uneven ground and potentially slippery surfaces, potential sink holes. Heavy vegetation within the northern quadrant of the WCDF will also make movement difficult. Potential standing water within the low point of the WCDF may also increase the potential for hazards of this nature.

- Cuts and lacerations – Some vegetation and clearing will be required during this activity to enable passage. This hazard may exists when handling brush hooks and machetes.

Natural Hazards – During the sample grid and location layout activities it is anticipated that natural hazards will be encountered. This includes potential insect/spider bites, snakes/snake bites, and potential alligator encounters.

5.3 REMOVAL OF VEGETATION

Once the grid and sample locations are surveyed, the FOL and/or the SSO will select the best travel route to each sample location. These pathways will be demarcated using flagging and site personnel will clear enough vegetation to move equipment and personnel and to conduct the operation. The hazards anticipated are the same as those specified in the surveying task (See Section 5.2).

5.4 SUBSURFACE SOIL SAMPLING USING DPT

Common physical hazards associated with DPT activities include the following:

- Pinch/compression Points – The potential exists during the soil boring using MacroCore Samplers to get fingers caught within pinch points during the hydraulic driving as well as between wrenches and hard surfaces when opening the samplers.

- Pressurized systems – This hazard is compounded due to the workers close proximity to pressurized hydraulic lines and systems on the DPT rigs. Those fittings and connections near the operator or

drillers helper that are not guarded will be secured by whatever means are necessary (i.e., pressurized line restraints) if they are unguarded.

- Noise – The operating level of a standard DPT rig varies between 89 and 92 dBA presenting potential noise exposure concerns. During hammering the impact levels may reach higher levels.

- Cuts, pricks, and lacerations – This hazard is possible when cutting the acetate liners. To combat this hazard the Geoprobe Sampling Kit or similar equipment is required. This mechanism secures the acetate liner while cutting. In addition when transporting glassware for sample collection or testing may present a problem should the glassware become broken. To combat this hazard hard sided containers such as coolers will be used to transport glassware. This will prevent possible breakage as well as protect the individual from the glass shards should the glass become broken.

Chemical Hazards – Potential occupational chemical exposure during this activity would be anticipated under the following conditions.

- Contaminant exposure based on direct interaction with contaminated media. See Table 6-1 for potential health effect information for known or suspected site contaminants. It should be noted that chemical contaminant levels based on previous information is considered negligible. However, as the entire area has not been evaluated the potential exists.

- Sample preservatives/Immunoassay field test kits/decontamination solutions – Certain chemicals will be brought on-site in support of this field investigation effort. These chemical hazard classes include corrosives, flammable, and oxidizers. The Immunoassay Field Test Kits employ methanol as an extracting agent and sulfuric acid as a stop agent besides a host of other enzymes and fixing agents. Handling these substances in a remote locations increases the potential for exposure

See Table 6-1 for potential health effect information due to chemical exposure. See also the Site Specific Hazard Communication Program for controlling hazards as it pertains to chemical substances brought on-site.

5.5 DECONTAMINATION

The equipment involved in the field activities for well installation and sampling will be decontaminated prior to, during, and after the completion of on-site activities.

5.5.1 Sampling Equipment

All non-dedicated sampling equipment (i.e. stainless-steel hand augers, trowels, bowls, MacroCore Samplers) will be decontaminated prior to the initiation of field sampling, between sample locations, and at the completion of the field activities. The following decontamination steps will be taken.

1. Remove heavy materials (soils, etc.)
2. Alconox or Liquinox detergent wash
3. Potable water rinse
4. Solvent rinse (Isopropanol)
5. DI water rinse
6. Air dry
7. Screen with FID to insure all contaminants as well as decontamination solvents have been removed.

All dedicated sampling and PPE equipment will be rinse to remove gross contamination and then disposed of.

Chemical Hazards associated with this activity include:

- Exposure to contaminated media
- Exposure to decontamination solvents

5.6 INVESTIGATIVE DERIVED WASTE MANAGEMENT

This task includes the containerization, labeling, staging, monitoring, and final deposition of investigative derived wastes. These are as follows:

Containerization – Materials generated including field tested soils and decontamination fluids. These materials shall be collected and containerized in 55-gallon drums and staged in a centralized location.

Labeling – All containers will be labeled as to their contents. The labels will include the following information

Site
Job Number
Location (SWMU)
Date – To be completed once filling the container begins

Drum # - Assign an inventory number to be added to a comprehensive log
Contents – Description
Volume – Final volume
Contact – This person should be available on base. To this end an up-dated inventory should be provided at the close of each shift to this person.
Emergency Number – Contact person provided above

Staging – All drums will be staged on pallets (4 to a pallet) with lid retention ring bolt accessible on the outside as well as the label. Pallet rows will maintain a minimum of 4 feet between rows for access and monitoring for leaks. Containers will be separated according to media and site.

Monitoring – During staging site personnel will examine containers to ensure they are not leaking.

Final Deposition – Waste materials will be separated as determined through sampling and disposed of through pre-determined routes.

Physical Hazards associated with this Waste Management activity include

- Caught between pinches and compressions. This occurs primarily when moving containers to transport vehicles and when staging the drums on pallets. The prevalent hazard is recognized when moving the drums and hands get caught between drums.

- Lifting – Drums of water can weigh upwards of 475 lbs. Drums of wet soil can weigh up to 750 lbs.

For more detailed description of the associated tasks, refer to the Work Plan (WP) and/or the Quality Assurance Plan (QAP).

5.7 GENERAL SAFE WORK PRACTICES

In addition to the task-specific safe work practices identified in Table 5-1 to be employed to minimize task specific hazards, the following general safe work practices will be employed. These safe work practices establish a pattern of general precautions and measures for reducing risks associated with hazardous site operations.

- Refrain from eating, drinking, chewing gum or tobacco, taking medication, or smoking in contaminated or potentially contaminated areas or where the possibility for the transfer of contamination exists.

- Wash hands and face thoroughly upon leaving a contaminated or suspected contaminated area. This is especially critical between breaks and prior to lunch and associated hand to mouth activities. Use hygienic wipes to accomplish this until you can get to a structured station.

- Avoid contact with potentially contaminated substances by walking around puddles, pools, mud, or other such areas. Avoid, whenever possible, kneeling on the ground or leaning or sitting on equipment. Do not place monitoring equipment on potentially contaminated surfaces.

- Be familiar with and adhere to all instructions provided within this site-specific HASP.

- Be aware of the location of the nearest telephone and all emergency telephone numbers. See Section 2.0, Table 2-1.

- Attend briefings on anticipated hazards, equipment requirements, Safe Work Permits, emergency procedures, and communication methods before going on site.

- Plan and mark entrance, exit, and emergency escape routes. See Section 2.0.

- Rehearse unfamiliar operations prior to implementation.

- Use the "buddy system".

- Maintain visual contact with each other and with other on-site team members by remaining in close proximity in order to assist each other in case of emergency.

- Establish appropriate Safety Zones including Support, Contamination Reduction, and Exclusion Zones.

- Minimize the number of personnel and equipment in contaminated areas (such as the Exclusion Zone). Non-essential vehicles and equipment should remain within the Support Zone.

- Establish appropriate decontamination procedures for leaving the site.

- Immediately report all injuries, illnesses, and unsafe conditions, practices, and equipment to the SSO.

- Matches and lighters are restricted from entering in the Exclusion Zone or Contamination Reduction Zone. Smoking will only be permitted in specified areas at Site 4.

- Observe coworkers for signs of toxic exposure and heat or cold stress.

- Inform co-workers of potential symptoms of illness, such as headaches, dizziness, nausea, or blurred vision.

5.8 SOIL BORING (DPT) SAFE WORK PRACTICES

The following Safe Work Practices are to be followed when working in or around the HSA/DPT Drill Rig Operations.

5.8.1 Before Drilling

- Identify all underground utilities and buried structures before drilling. This service is provided by the Sunshine State One Call of Florida (1-800-432-4770). The typical sequence of events are as follows:

1. A request for an Excavation Permit is submitted to NAVSTA Mayport (Public Works/Facility Engineering) who in turn provides this service themselves or will request utility clearances from Sunshine State One Call of Florida (1-800-432-4770) for clearance of a location(s). Often times intersections, building numbers, or other location identifiers are provided. It is best to provide as much assistance as possible including the following:
    a) Providing drawings where the subsurface activities will occur.
    b) Ensure that marks are on the ground using white paint or flagging to positively identify the locations where the subsurface activity will occur.

    Sunshine State One Call of Florida then notifies members within this cooperative. This is sometimes where problems arise. Not all utilities providers are required to be members. Provisions to accommodate this shortfall are provided in the TtNUS Utility Locating and Excavation Clearance Standard Operating Procedure provided in Attachment III.

2. Typical timeline for marking and providing clearances is 48-hrs. A ticket or ticket number will be provided referring to your clearance. This will have a timeline, generally 14-days. Again problems sometime arise here because site personnel allow their tickets to expire, and then accidentally encounter a utility. Tickets must be maintained valid by asking for a re-issue or extension, when necessary, prior to expiration.

3. Another problem that occurs with time is that utility locations marked on the ground may not remain visible. The FOL is responsible for ensuring that utility locations/marks on the ground are maintained so they remain visible (repaint, pin flags, etc.), and to annotate maps with these locations so they may be incorporated into the GIS system.

4. Lastly, once marks are placed on the ground and have been cleared, only limited leeway (2-feet) exists to stray from the planned and approved intrusive locations.

Once all of this has been completed, NAVSTA Mayport will issue an Excavation Permit authorizing the Contractor to proceed.

- All DPT rigs will be inspected by the SSO or designee, prior to the acceptance of the equipment at the site and prior to the use of the equipment. All repairs or deficiencies identified will be corrected prior to use. The inspection will be accomplished using the Equipment Inspection Checklist for Drill Rigs provided in Attachment IV. Inspection frequencies will be once every 10-day shift or following repairs.

- Ensure that all machine guarding is in place and properly adjusted.

- The work area around the point of operation will be leveled to the extent possible to remove any trip hazards. It is anticipated that roots or stumps may stick up as it is difficult to cut them close to the ground. However, remove as much cut vegetation as possible.

- The DPT Operator and/or helper will establish an equipment staging and laydown plan. The purpose of this is to keep the work area clear of clutter and slips, trips, and fall hazards.

5.8.2 During Drilling

- Minimize contact to the extent possible with contaminated tooling and environmental media. All potentially contaminated tooling will be placed on polyethylene sheeting.

- Support functions (sampling and screening stations) will be maintained a minimum distance from the drill rig of the height of the mast plus five feet or (25-feet for DPT Rigs) whichever is greater. These distances have been determined to restrict activities from within suspected physical hazard boundaries.

- Only qualified operators and knowledgeable ground crew personnel will participate in the operation of the drill rig.

- During maintenance, use only manufacturer provided/approved equipment (i.e. push and pull caps, cutting shoes, etc.)

- Only personnel absolutely essential to the work activity will be allowed in the exclusion zone. Site visitors will be escorted at all times.

5.8.3 After Drilling

- All equipment used within the exclusion zone will undergo a complete decontamination and evaluation by the FOL and/or the SSO to determine cleanliness prior to moving to the next location, exiting the site, or prior to down time for maintenance.

- All motorized equipment will be fueled prior to the commencement of the days activities. During fueling operations all equipment will be shutdown and bonded to the fuel source.

- All areas subjected to subsurface investigative methods will be restored to equal or better condition than original to remove any contamination brought to the surface and to remove any physical hazards. In situations where these hazards cannot be removed these areas will be barricaded to minimize the impact on field crews working in the area and the general population who may have access to these areas.

TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES

Revision 0
July 2004

Task/ Operation/ Location	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Types and Action Levels	Personal Protective Equipment *(Items in italics are deemed optional as conditions or the FOL or SSO dictate.)*	Decontamination Procedures
Mobilization/ Demobilization This activity includes: - Equipment Preparation and Inspection - Resource acquisition and unpacking of supplies - Construct decontamination and IDW operation and storage facilities, as applicable.	***Chemical hazards:*** 1) Exposure to identified site contaminants are not anticipated. However, potential exposure to chemicals brought on-site should be considered. ***Physical hazards:*** 2) Lifting (strain/muscle pulls) 3) Cuts and lacerations 4) Pinches and compressions/Struck by 5) Slips, trips, and falls 6) Heavy equipment hazards (swinging booms, hydraulic lines, etc.) 7) Vehicular and foot traffic ***Natural hazards:*** 8) Ambient temperature extremes (heat/cold stress) 9) Insect and animal bites 10) Inclement weather	***Chemical hazards:*** 1) The on-site Hazard Communication Program (Section 5.0 TtNUS Health and Safety Guidance Manual) will be followed. All chemicals brought onto the site by Tetra Tech NUS and subcontractor personnel will be inventoried with each applicable chemical having an MSDS on site, on file. This effort shall include • Accurate Chemical Inventory List (Entries will match chemicals brought on-site, as the names appear on the MSDS and the label) This list, which also includes quantities and storage locations will be maintained in a centralized location and made available upon request. • MSDS's will be maintained in a central location, accessible to all personnel. • All containers will have labels specifying the following information: - Chemical Identity (As it appears on the label, MSDS, and Chemical Inventory List) - Appropriate Warning (i.e., Eye and skin irritation, flammable, etc.) - Manufacturer's Name Address and Phone Number All personnel will be required to review the appropriate MSDS's if they are not familiar with the hazards of the chemicals to be used, prior to the use of a specified chemical substance. Information on hazards and PPE will be communicated on the Safe Work Permit for this task. Any specific provisions recommended by the MSDS shall be in place (i.e., eye wash, fire extinguisher, specified PPE, etc.) prior to using the chemical substance. ***Physical hazards:*** 2) **Lifting Hazards –** During mobilization/demobilization personnel are required to handle equipment, supplies, and resources in preparation for site activities. This hazard becomes more predominant in the early morning hours (prior to muscles becoming limber) and later in the day (as a result of fatigue). The following provisions shall be instituted in order to minimize hazards of this nature: • Use machinery or multiple personnel for heavy lifts, where possible. • Use proper lifting techniques - Lift with your legs, not your back, bend your knees move as close to the load as possible, and ensure good hand holds are obtainable. - Minimize the horizontal distance to the center of the lift to your center of gravity. - Minimize turning and twisting when lifting as the lower back is especially vulnerable at this time. - Break lifts into steps if the vertical distance (from the start point to the placement of the lift) is excessive. - Plan your lifts – Place heavy items on shelves between the waist and chest; lighter items on higher shelves. - Periods of high frequency lifts or extended duration lifts should provide sufficient breaks to guard against fatigue and injury. Other considerations associated with lifting injuries and muscle strains include • Area available to maneuver the lift. • Area of the lift – Work place clutter, slippery surfaces • Your Overall physical condition 3) **Cuts and lacerations** – To prevent cuts and lacerations associated with unpacking or packing equipment and supplies, the following provisions are required: - Always cut away from yourself and others, then, if a knife slips, you will not impale yourself or others. - Do not place items to be cut in your hand or on your knee. - Change out blades as necessary to maintain a sharp cutting edge. Many accidents result from struggling with dull cutting instruments. 4) **Pinches/Compressions/Struck By** - Do not modify tooling without manufacturer's expressed permission. - Keep any machine guarding in place, avoid moving parts. - Use tools or equipment where necessary to avoid placing hands in areas vulnerable to pinch points. - Adjust machine guarding as necessary to minimize distance between guards and point of operation. - When staging equipment, insure all stacked loads, shelving, are adequately secure to avoid creating a hazard from falling objects. 5) **Preview work locations for unstable/uneven terrain**. - Cover, guard and barricade all open pits, ditches, etc. as necessary. - Ruts, roots, tools, and other tripping hazards should be eliminated to minimize trips and falls. - Maintain a clutter free work area - As part of site control efforts construct fences or other means of demarcation (i.e. signs and postings) to control and isolate traffic in the work area. Means of demarcation shall also be constructed isolating resource and/or staging areas. 6) **Heavy Equipment Hazards** - All equipment will be - Inspected in accordance with OSHA and manufacturer's design. - All equipment inspection will be documented on a Equipment Inspection Checklist as provided in (See Attachment III). - Operated by knowledgeable operators and ground crew. 7) **Vehicular and Foot Traffic Hazards** - As part of site preparation activities and zone construction, when preparing traffic and equipment considerations are to include the following: - Establish safe zones of approach (i.e. Boom or mast + 5 feet). 25-feet for the DPT Rig. - The mast will be lower when moving the rig. - Foot and vehicular traffic routes shall be well defined. - Heavy equipment patterns shall be isolated using fences or other suitable barricades from pedestrian pathways as necessary. - Bumpers or other suitable traffic stops shall be placed in areas where it is desired that traffic approaching an drop offs or unprotected banks. - All self-propelled equipment with restricted vision moving backwards shall be equipped with back up warning systems. - The FOL and/or the SSO as a precautionary measure to remove or demarcate physical hazards shall preview traffic routes (foot and vehicular) before the commitment of personnel and resources. ***Natural hazards:*** 8) **Ambient Temperature Extremes** - Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat and cold stress is provided in Section 4.0 of the TtNUS Health and Safety Guidance Manual. See Section 6.3.5 and Table 6-4 for information concerning Heat Stress signs and symptoms. 9) **Insect/Animal Bites and Stings** - This is not considered a predominant hazard during mobilization/demobilization. Insects and spiders - Wear light color clothes. This will allow easier detection of ticks and insects crawling on your body. It will also assist in heat stress control. - Tape pant legs to work boots to block direct access. This is especially critical when clearing or entering heavy brush and wooded areas. - Do not stick your hand anywhere where you can't see. - When opening existing well heads be cautious of bees and spiders as these are preferred nesting locations. - Use repellents – Follow manufacturer's recommendations for use. Permanone should be applied liberally to the clothing, but not the skin as it may cause irritation. Concentrate on areas where ticks and other insects may access your body such as pant cuffs, shirt to pants, and collars. Repellants such as those containing DEET may be applied to the skin. In all cases follow the manufacturer's instructions. - If you leave your workboots at the trailer or office over your break make sure you shake them out before sticking your feet in them. See Section 4.0 of the HSGM for more information concerning these natural hazards. 10) **Inclement Weather** - Suspend or terminate operations until directed otherwise by SHSO. See Section 4.0 of the TtNUS Health and Safety Guidance Manual for additional information concerning natural hazards.	Visual observation of work practices by the FOL and/or the SSO to minimize potential physical hazards (i.e., improper lifting, unsecured loads, cutting practices, etc.). Monitoring for chemical hazards are not required during this activity.	Level D - (Minimum Requirements) - Standard field attire (Sleeved shirt; long pants) - Safety shoes (Steel toe/shank) - *Snake chaps(for remote and unmaintained areas)* - *Safety glasses (for moving through brush and when involved in activities that could result in flying projectiles such as hammering or chopping and clearing brush)* - *Hardhat (when overhead hazards exists, or identified as a operation requirement)* - *Reflective vest for high traffic areas* - *Hearing protection for high noise areas (At the direction of the FOL and/or the SSO).* As site conditions may change, the following provisions will be maintained during all on-site activities as prescribed in Section 2.0 of this HASP - Fire Extinguishers - First-aid kit - Eye wash units - Emergency Contact List - Map to the Hospital ***Note:*** *The FOL and/or the SSO will determine the number of fire extinguishers and first-aid kits to be made available based on the number of operations to be conducted at any given time.*	Not required. Good personal hygiene practices should be employed prior to breaks lunch or other period when hand to mouth contact occurs. This will minimize potential ingestion exposures. In addition, examine yourself closely when exiting tall grasses and underbrush for ticks.

TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES

Tasks/Operation/Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type And Action Levels	Personal Protective Equipment *(Items In Italics Are Deemed Optional As Conditions Or The FOL Or the SSO Dictate.)*	Decontamination Procedures
Removal of Vegetation – This will be conducted using hand tools such as brush hooks and machetes. Based on the density of the vegetation motorized equipment may be employed including the use of chainsaws.	***Chemical hazards:*** None anticipated ***Physical hazards:*** 2) Hand tools and chainsaws 3) Noise ***Natural hazards:*** 4) Insect/animal bites and stings	***Chemical hazards:*** 1) No provisions are currently instituted for protection against chemical hazards as currently none are anticipated as part of this activity. ***Physical hazards:*** If hand toos (brush hooks, machetes, etc.) are used to clear and carry lines to the area of operation the following precautions are recommended: - Ensure handles are of good construction (no cracks, splinters, loose heads/cutting apparatus. - Ensure all cutting tools are maintained. Blades shall be sharp without nicks and gouges in the blade. - All hand tools (brush hooks, machetes, etc.) with cutting blades shall be provided with a sheath to protect individuals, when not in use. - All personnel will maintain a 10-foot perimeter around persons clearing brush. *Chainsaw Operations* Recommended Safe Work Practices: - Inspect the chainsaw prior to each use. Insure the blade is adjusted and sharp, and all parts are lubricated per the manufacturer's instruction. - Test all safety devices initially and then periodically to insure operational status. - When starting, place the chainsaw on the ground or some other firm surface. Place your foot in the hand guard at the rear of the saw, grip the top handle of the saw with one hand, pull the start cord with the free hand. Never attempt to start the saw free hand or by placing on your knee. - Never cut with tip of the chain saw blade. - Plan the cut. Know where the tree will fall. Have a clear escape plan and route when dropping trees greater than 2 inches in girth. - Preview the tree to be dropped. Often, red wasps will nest in hollowed out trunks and in tree tops. - Do not stand between falling trees and branches and fix items or other trees. - Do not cut over your head. - Do not cut materials other than wood with the chain saw. - Wear prescribed safety equipment. - Monitor, the condition of the saw during use, make adjustments, as necessary. - When limbing a tree, to the extent possible cut from the other side of the trunk which will serve as a shield. - Be attentive as to which way the trunk may move when removing limbs, place yourself out of the anticipated pathway when cutting. - Be attentive to movement of the trunk as an indication of the stability of the tree and brush pile. - Keep the work area free from clutter to avoid potential slip, trip, and fall hazards. Note: Where possible it is recommended that heavy equipment (tractors and brush hogs or similar equipment) be used to clear grid lines and lines of site. 3) Due to operations generated noise levels, excessive noise control will be facilitated through the use of hearing protection. ***Natural hazards:*** 4) **Insect/Animal Bites and Stings** - This is considered a predominant hazard as these activities are to be conducted in remote unmaintained areas. To combat the potential impact of natural hazards, the following actions are recommended Snakes – The potential for encountering snakes is more likely near waters edge and along the bank where they sun themselves, sheltered by brush and deadfall, rocks, etc. - Items laying on the ground provide cover and nesting locations. If you must pick something up to move it always pull it towards your body to provide a shield. Remember a snake can strike ½ to 2/3 the length of its body. See 6.3.2 for more information. - Leave snakes and animals alone, do not harass or try to capture. Contact the SSO/PHSO for direction in the removal of animals and snakes within the confines of the work site. - Snake chaps or high leather boots should be worn in unimproved or unmaintained areas, if you are unknowledgeable regarding nesting and habitat considerations for indigenous animals and reptiles. - Keep hands and feet out of areas you cannot see. Alligators – Again may present a hazard along water ways in unmaintained/remote areas - Do not harass or otherwise bother an alligator - Remember they are more aggressive during mating and nesting periods (February/May mating period; June/July nesting; August/September Young are hatched. - Buddy System – Always use two people when performing duties in areas where alligators may exist. One to serve as a watch while the other completes the task. - Nesting areas – These areas are usually marked by mounded areas of grasses and mud. A telltale characteristic of these nests is the noticeable slide marks leading from the mound into the water. Avoid these areas. Insects and spiders - Wear light color clothes. This will allow easier detection of ticks and insects crawling on your body. It will also assist in heat stress control. - Tape pant legs to work boots to block direct access. This is especially critical when clearing or entering heavy brush and wooded areas. - Do not stick your hand anywhere where you can't see. - Use repellents – Follow manufacturer's recommendations for use. Permanone should be applied liberally to the clothing, but not the skin as it may cause irritation. Concentrate on areas where ticks and other insects may access your body such as pant cuffs, shirt to pants, and collars. Repellants such as those containing DEET may be applied to the skin. In all cases follow the manufacturer's instructions. - If you leave your workboots at the trailer or office over your break make sure you shake them out before sticking your feet in them. - As this activity may take personnel into areas of heavier vegetation, surveyors should be cognizant of poison ivy, poison oak, and poison sumac in the area. See Section 6.3.4 of this HASP for descriptions of these plants. Protective measures to be used to minimize hazards of this nature a) Avoid direct contact through the use of Tyvek coveralls, clothing, or barrier creams b) Wash after contact with cool water and mild soap. c) Wash equipment contaminated with the oils of these plants to avoid cross contamination. - Electrical storms or high winds - Suspend or terminate operations until directed otherwise by SSO. See Section 4.0 of the HSGM for more information concerning these natural hazards.	3) The SSO may perform noise dosimetry to ensure the operational activities, and any contributional levels associated with the operation do not surpass the noise attenuation factors associated with the hearing protection selected. This activity will be at his or her discretion	The removal of vegetation is anticipated to be initiated in a modified Level D protection. Level D - (Minimum Requirements) For vegetation clearance activities: - Tyvek coverals (Based on site conditions, time of the year, etc.) - Field attire (Long sleeve shirt; long pants) - Safety shoes Steel toe/shank) - Safety glasses/chippers shield - Hardhat (when overhead hazards exists, or identified as a operation requirement) - Hearing protection - Work gloves - Chain saw chaps for chain saw operator Note: Secure all loose fitting PPE. **Note:** If conditions of heat stress are prevalent taping pant legs may increase heat prostration, the SSO will make the final decision based on site-specific conditions. If conditions of heat stress are not prevalent personnel will be required to tape pant legs to boots to deny entry as well as, use insect repellant (Permanone) on shoe or boots, pant legs, pants to shirt seams to control access. If conditions of heat stress are not prevalent, the use of Tyvek, light colored coveralls with taped pant legs are recommended as the light color of the coveralls makes detection easier. This table for removal of vegetation addresses minimum content based on anticipated hazards and recommended control measures. The Safe Work Permit for this activity is presented in Attachment IV. This is to be completed by the FOL and/or the SSO. In the completion, these permits are to incorporate ste-specific information and may actually establish requirement above and beyond, that presented in this table. In all cases, the most conservative measures will apply.	**Personnel Decontamination** It is not anticipated that site personnel engage in this task will encounter any of the associated site contaminants. Therefore, personnel decontamination will consist of - Equipment drop - Remove disposable outer protective garments. as applicable. - Wash hands and face, leave contamination reduction zone **Equipment Decontamination** General cleaning before return to the rental agency or warehouse.

TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES

Task/Operation/Location	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type and Action Levels	Personal Protective Equipment *(Items in italics are deemed optional as conditions or the FOL or SSO dictate.)*	Decontamination Procedures
Subsurface soil sampling activity includes: - Subsurface soils – MacroCore samplers, disposable trowels. The DPT drilling hazards are addressed under Table 5-1 Soil boring-DPT. - Once the acetate liner is cut, sample aliquots will be subjected to immunoassay field test reagents to determine if PCBs possibly exist. Hazards are anticipated to be similar in all of these activities.	***Chemical hazards:*** 1) Previous analytical data identified the following compounds as contaminants of concern 1,2-Dichloroethane (1,2-DCA) Tetrachloroethylene It should be noted that those listed above as well as additional VOCs may be encountered however they are not at concentrations that pose a potential exposure risk via inhalation. Further information on these contaminants are provided in Section 6.1 and Table 6-1. Immunoassay Field Test Kits – Primary Chemical concerns include - Methanol - Sulfuric Acid 2) Transfer of contamination into clean areas. ***Physical hazards:*** 3) Slip, trip, and fall hazards 4) Strain/muscle pulls from manual lifting 5) Cuts and Lacerations 6) Ambient temperature extremes (heat/cold stress) ***Natural hazards:*** 7) Animal and insect bites and encounters 8) Inclement weather	***Chemical hazards:*** 1) PPE and air monitoring will be employed to control potential exposure. As a general rule, avoiding contact with contaminated media (water, soils, etc.) will be employed as a universal control measure. In addition, good work hygiene practices including avoiding hand-to-mouth contact to the extent possible, washing hands and face or using hygienic wipes to remove potential contaminants from hands and face prior to breaks or lunch or other hand to mouth activities will restrict the most predominant route of exposure. ***Liquids/gases*** – Primary contaminants in this case exist in liquid media and present a vapor or gas hazard threat, real time monitoring instruments (FID) and PPE will be employed to support protective measures. As part of the evaluation method of these subsurface media, all samples will be scanned with a FID to determined potential source concentration. The Immunoassay Field Test Kits have a number of reagents that will be added to the soil sample. This procedure requires the addition/decanting of these materials in a specific sequence and within a specified increment of time. These material will be incorporated into the on-site Hazard Communication Program (Section 5.0 TtNUS Health and Safety Guidance Manual). See Table 5-1, Mobilization/Demobilization for informational requirements. MSDSs for these substances are contained in Attachment V. All personnel will be required to review the appropriate MSDS's if they are not familiar with the hazards of the chemicals to be used, prior to the use of a specified chemical substance. Information on hazards and PPE will be communicated on the Safe Work Permit for this task. Any specific provisions recommended by the MSDS shall be in place (i.e., eye wash, fire extinguisher, specified PPE, etc.) prior to using the chemical substance. To avoid improper mixing, missing timelines stations should be laid out in the sequence to be performed. Proper labeling of stations and containers will also help control these potential hazards. - Training/practicing the sequence is highly recommended - All solutions will be considered hazardous - Test Kits are to be stored 36-46°F, store under ambient conditions on the day of use. - Recap standard vials when not in use. 2) **Transfer of Contamination into Clean Areas** - Decontaminate all equipment and supplies between sampling locations and prior to leaving the site. See decontamination of sampling equipment for direction in this task. In addition, the bulk of sampling equipment (i.e., trowels, acetate liners are disposable therefore dedicated). 3) **Slip, Trip, and Fall Hazards** – These hazards shall be minimized by adherence to the practices listed below. This includes - Maintain proper housekeeping in all work areas. - Preview and inspect work areas to identify and eliminate slip, trip, or fall hazards. Clearing of vegetation will not eliminate stumps and other potential trip hazards completely. However, brush cut down should be removed from travel paths. - Cover, guard, barricade, and or place warning postings over/at sink holes, banks/ditches or openings that personnel may fall or step into. - For traversing steep, slippery, or sloped terrain establish rope ladders to control ascent and descent to sampling areas or use alternative pathways. - Use lifeline to sample along waters edge - Use multiple persons and pack small loads to remote locations. 4) **Strain/Muscle Pulls from Manual Lifting** - Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques (See Lifting Mobilization/Demobilization, Table 5-1). 5) **Cuts and Lacerations** – Employ the following measures to reduce and/or eliminate the potential for cuts and lacerations - Select and secure the most favorable route to sampling locations. - Previewing pathways - Where possible, remove or demarcate the physical hazards. - Inspect all cutting equipment to be used to clear access routes for defects. - When cutting items - always use a sharp knife and always cut away from your body. Do not place items to be cut in your opposite hand or on your knee. - Carry all glassware and items that present a potential for cuts, lacerations, or impalement such as machetes or brush hooks in protective packaging or sheathed to avoid breakage or exposure in the event of a slip, trip, and/or fall. - Obtain and use the knife and acetate tube retention tub recommended by Geoprobe (Geoprobe Sampling Kit) to prevent potential cuts and lacerations when accessing samples within MacroCore acetate liners. These items have been engineered to allow sample acquisition without putting the sampler at risk. 6) **Ambient Temperature Extremes (Heat/Cold Stress)** - Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat/cold stress is provided in Section 4.0 of the Health and Safety Guidance Manual. Care should be exercised when working outdoors due to harmful affects of the sun. To reduce the potential for sunburn and melanoma the following measures should be employed - Wear a hat that shades the face, neck, and ears. - Apply sunscreen with a SPF of 15 or higher liberally on any exposed skin at least 15 minutes before going outside, then at least every two hours, more if you are sweating a lot. - Plan/provide suitable equipment to offer shade to avoid the midday sun since the sun's ultraviolet rays are most intense between 10 A.M. and 4 P.M. and can damage your skin even on hazy days. - Wear wrap-around sunglasses to protect the eyes and delicate skin around them. 7) **Insect/Animal Bites and Stings** - This is considered a predominant hazard as these sampling activities are to be conducted in remote unmaintained area. See Table 5-1 Removal of Vegetation for recognition of these hazards and appropriate control measures. 8) Suspend or terminate operations during electrical storms. Return to work when directed by the FOL and/or the SSO. See Section 4.0 of the HSGM for more information concerning these natural hazards.	1) Monitoring shall be conducted to qualify and quantify estimated source concentrations of on-site contaminants in support of the prescribed worker protection levels. Monitoring shall be conducted using a Flame Ionization Detector (FID) **VOCs/Chlorinated Solvents** • 10 ppm in the workers breathing zone sustained (10 minutes) **Dust and Particulates** • Visible dust >2 mg/m^3 Sustained airborne concentrations above the identified action levels will result in ceasing the operation until airborne concentrations recede to background levels. Failure of these concentrations to diminish will require an upgrade in the level of protection and a modification of this HASP. Contact the PHSO. Monitoring shall be conducted at the prescribed depths as indicated on the boring logs at the source (borehole) and drillers/samplers breathing zones. As stated earlier it is not anticipated that airborne concentrations will reach this level in an open air environment. Noise monitoring maybe conducted at the discretion of the PHSO and/or the SSO. Action Level - >85 dBA Participation in the Project Hearing Conservation Program. Hearing protection is required for this operation.	Level D protection will be utilized for the following sampling activities Sampler/Oversight Personnel - Standard field dress (long pants, Sleeved shirts) - Steel be safety shoes or work boots - Safety Glasses - Nitrile surgeon style inner gloves for sampling - *Hearing protection* (when within 25-feet of an operating direct push rig) - *Impermeable boot covers* Protective Measures as specified for drilling and soil boring will be employed for all subsurface soil sampling at the drill rig. **Upgrades to Level C and B protection** are not anticipated. **Note:** Use of respiratory protection will require the implementation of the Tetra Tech NUS, Inc. Respiratory Protection Program provided in the Health and safety Guidance Manual. This action will require this HASP to be modified for this elevated level of protection. **Note:** The Safe Work Permit(s) for this task (See Attachment IV) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.	**Personnel Decontamination** Upon completion of the sampling - Dedicated trowels and PPE will be rinsed and bagged for disposal. - Handi-Wipes or similar product will be used to clean hands, prior to moving to the next location. **Equipment Decontamination** Decontamination of equipment (sampling and hand tools) will proceed as indicated in Table 5-1 of this HASP and/or the Workplan.

TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES

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Task/Operation/Location	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type and Action Levels	Personal Protective Equipment *(Items in italics are deemed optional as conditions or the FOL or SSO dictate.)*	Decontamination Procedures
DPT - Soil Borings – Subsurface soil sampling will be collected at multiple locations and multiple depths within 21 sample grids using DPT - Sample acquisition will be accomplished using a MacroCore Sampler equipped with an acetate liner.	***Chemical hazards:*** 1) Previous analytical data identified the following compounds as contaminants of concern 1,2-Dichloroethane (1,2-DCA) Tetrachloroethylene It should be noted that those listed above as well as additional VOCs may be encountered however they are not at concentrations that pose a potential exposure risk via inhalation. Further information on these contaminants are provided in Section 6.1 and Table 6-1. 2) Transfer of contamination into clean areas or onto persons. ***Physical hazards:*** 3) Heavy equipment hazards (pinch/compressions points, rotating equipment, hydraulic lines, etc.) 4) Noise in excess of 85 dBA 5) Energized systems (contact with underground or overhead utilities) 6) Lifting (strain/muscle pulls) 7) Slips, trips, and falls 8) Cuts and lacerations ***Natural hazards:*** 9) Inclement weather 10) Insect bites	***Chemical hazards:*** 1) Safe work practices and monitoring instruments will be employed as the first line of defense. As a general rule, avoiding contact with contaminated media (water, soils, etc.). In addition, good work hygiene practices including avoiding hand-to-mouth contact to the extent possible, washing hands and face or using hygienic wipes to remove potential contaminants from hands and face prior to breaks or lunch or other hand to mouth activities will restrict the most predominant route of exposure. ***Liquids/gases*** – Primary contaminants in this case exist in liquid media and present a vapor or gas hazard threat, real time monitoring instruments and PPE will be employed to support protective measures. As part of the evaluation method of these subsurface media, all samples will be scanned with a FID to determined potential source concentration. As some of the contaminants may bind to particulate matter as a general protective measure dust will be minimized top the extent possible. If there is visible dust, wet it down to suppress. 2) **Transfer of Contamination into Clean Areas or onto Persons** - Restrict the cross use of equipment and supplies between locations and activities without first going through a suitable decontamination. Work practices including establishing a rigid decontamination procedure will be employed for all equipment between locations and between clean and potentially dirty work. This provision along with dedicated sampling equipment will insure materials are not carried and deposited in unaffected areas. ***Physical hazards:*** 3) **Heavy Equipment Hazards** - All equipment will be: - Inspected in accordance with Federal safety and transportation guidelines, OSHA (1926.600.601.602), and manufacturer's design, as applicable. All inspections will be documented using the Equipment Inspection Checklist (for Drill Rigs) found in (See Attachment III) of this HASP. - Operated and supported by knowledgeable operators and ground crew. - Used within safe work zones, with routes of approach clearly demarcated. All personnel not directly supporting this operation will remain at least 25-feet for DPT rigs from the point of operation or the height of the mast plus 5-feet, whichever is greater. See Section 10.1.1 of this HASP. This will be the area identified as the exclusion zone. - All equipment/vehicles with a restricted view moving backwards shall be equipped with Back up alarms. - Areas will be inspected prior to the movement of the DPT rig and support vehicles to eliminate any physical hazards. This will be the responsibility of the FOL and/or SSO. - See additional safe work procedures for DPT drilling in Section 5.8 of this HASP as well as in Section 4.0 of the HSGM. 4) **Noise in Excess of 85 dBA** - Hearing protection will be used during all subsurface activities using the DPT rig or when noise levels are >85 dBA. (during operation). Previous accumulated data indicates an average 8 hour exposure working behind a DPT during operation is approximately 87-92 dBA.. Controlling this hazard shall be accomplished employing two separate approaches as follows: - Boundaries will be established to limit the affect of the noise hazard. The height of the mast + 5 feet or 35-feet for HSA Rigs/25 feet for DPT rigs whichever is greater will remove personnel far enough from the noise source as not to present a noise exposure concern. - Hearing protection *As a general rule of thumb - Excessive noise levels (>85dBA) are being approached when you have to raise your voice to talk to someone within 2 feet of your location.* 5) **Energized Systems** - All drilling activities will proceed in accordance with the Utility Locating and Excavation Clearance SOP in Attachment II of this HASP. All utility clearances will be obtained in writing, and locations identified and marked, prior to activities. If it is not obtainable/unknown or you location infringes within 3-feet of an underground utility advancement must proceed by hand until past the utility. The hand dug hole must at least represent the same diameter of the mechanized tooling that will be used. Utility clearance is being provided by NAVSTA Mayport and Sunshine State One Call of Florida, Inc.. 6) **Lifting Hazards** - Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques as described in Table 5-1 for mobilization/demobilization. 7) **Slips, Trips, and Falls** - Preview work locations for unstable/uneven terrain. - Cover, guard and barricade all open pits, ditches, etc. as necessary. - Ruts, roots, tools, and other tripping hazards should be eliminated. - Maintain a clutter free work area. - As part of site control efforts construct fences or other means of demarcation (i.e. signs and postings) to control and isolate traffic in the work area. Means of demarcation shall also be constructed isolating resource and/or staging areas. This aspect is more important when working within populated areas where facility personnel may be encountered. 8) **Cuts and Lacerations** - To prevent cuts and lacerations, the following provisions are required: - Obtain and use the knife and acetate tube retention tub recommended by Geoprobe (Geoprobe Sampling Kit) to prevent potential cuts and lacerations when accessing samples within MacroCore acetate liners. These items have been engineered to allow sample acquisition without putting the sampler at risk. - Always cut away from yourself and others, then, if a knife slips, you will not impale yourself or others. - Do not place items to be cut in your hand or on your knee. - Change out blades as necessary to maintain a sharp cutting edge. Many accidents result from struggling with dull cutting attachments. - Wear cut-resistant gloves (leather or heavy cotton), where possible ***Natural hazards:*** 9) **Inclement Weather** – To minimize hazards of this nature, the following provisions shall be employed: - Wear appropriate clothing for weather conditions. - Provide acceptable shelter and replacement liquids for field crews as relief from excessive ambient temperatures and the sun. - Under conditions of elevated levels of PPE, periods of acclimatization, excessive ambient temperature extremes, or if you believe someone is suffering from a heat/cold related disorder, it may be necessary to conduct heat/cold stress monitoring. See Table 6-4 for signs and symptoms/biological indicators. - Electrical storms/high winds - Suspend or terminate operations until directed otherwise by SSO. 10) **Insect bites/Snakes/Alligators**. See Removal of Vegetation for protective measures. These hazards are anticipated to be as predominant during this activity and in this area. See the provisions as specified in Section 4.0 of the Tetra Tech NUS, Inc. Health and Safety Guidance Manual regarding the identification and evaluation of heat/cold stress related conditions.	1) Monitoring shall be conducted to qualify and quantify estimated source concentrations of on-site contaminants in support of the prescribed worker protection levels. Monitoring shall be conducted using a Flame Ionization Detector (FID) **VOCs/Chlorinated Solvents** • 10 ppm in the workers breathing zone sustained (10 minutes) **Dust and Particulates** • Visible dust >2 mg/m^3 Sustained airborne concentrations above the identified action levels will result in ceasing the operation until airborne concentrations recede to background levels. Failure of these concentrations to diminish will require an upgrade in the level of protection and a modification of this HASP. Contact the PHSO. Monitoring shall be conducted at the prescribed depths as indicated on the boring logs at the source (borehole) and drillers/samplers breathing zones. As stated earlier it is not anticipated that airborne concentrations will reach this level in an open air environment. Noise monitoring maybe conducted at the discretion of the PHSO and/or the SHSO. Action Level - >85 dBA Participation in the Project Hearing Conservation Program. Hearing protection is required for this operation.	All soil boring operations and monitoring well installation will be initiated in Level D protection, including the following articles: Sampler/Oversight Personnel - Standard field dress (long pants, Sleeved shirts) - Steel toe safety shoes or work boots - Hard hat(when within 25-feet of the DPT drill rig) - Safety Glasses(when within 25-feet of the DPT drill rig or when sampling) - Nitrile surgeon style inner gloves for sampling - Hearing protection(when within 25-feet of an operating DPT drill rig) - *Impermeable boot covers* **Driller and Driller Helper** - Standard field attire including sleeved shirt and long pants - Safety shoes (Steel toe/shank) - Safety glasses - Nitrile inner and outer gloves or supported neoprene - Hearing protection - Hard hat - *Impermeable aprons or suitable barrier are recommended for handling contaminated tooling against the body. The apron/equivalent will prevent soiling and satuation of work clothes* - *Impermeable boot covers* **Upgrades to Level C and B protection** are not anticipated. **Note:** Use of respiratory protection will require the implementation of the Tetra Tech NUS, Inc. Respiratory Protection Program provided in the Health and safety Guidance Manual. As site conditions may change, the following equipment will be maintained during all on-site activities - Fire Extinguishers - First-aid Kit - Eye Wash Unit **Note:** The Safe Work Permit(s) for this task (See Attachment IV of this HASP) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.	**Personnel Decontamination** will consist of a soap/water wash and rinse for reusable and non-reusable outer protective equipment (boots, gloves, impermeable apron, as applicable Gross contamination of outer boots and outer gloves will be removed at a satellite location near the operation. The sequential procedure is as follows: Stage 1: Equipment drop Decontamination personnel will clean hand tools as necessary. Stage 2: Soap/water wash and rinse of outer boots as applicable and gloves Stage 3: Soap/water wash and rinse of the impermeable apron, as applicable. Stage 4: Disposable PPE will be removed and bagged. Stage 5: Wash face and hands Note: For remote locations away from the centralized decontamination unit - Bag and/or wrap all disposable and reusable equipment, respectively for transport back to the decontamination unit. - Hygienic wipes may be used for cleaning hands and face The FOL or the SSO will be responsible for evaluating equipment arriving on-site, leaving the site, and between locations. No equipment will be authorized access, exit, or movement to another location without this evaluation.

TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES

Tasks/Operation Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type And Action Levels	Personal Protective Equipment *(Items In Italics Are Deemed Optional As Conditions Or The FOL Or the SSO Dictate.)*	Decontamination Procedures
IDW Management and Handling This activity incluces the following tasks: - Containerization - Labelling - Staging - Monitoring of IDW generated in support of site activities.	***Chemical hazards:*** The only anticipated chemical hazard associated with IDW management is the potential for a spill. In situations such as that the spill containment program identified in Section 9.0 of this HASP will be employed. ***Physical hazards:*** 1) Strains and sprains 2) Back injuries 3) Compressions 4) Loading bulk transport containers	***Chemical hazards:*** It is not anticipated that chemical hazards will be significant during this operation, as the IDW will be in sealed containers. It is anticipated that the IDW will represent a limited chemical hazard, if the container is breached. Control measures in this case will represent PPE and good work hygiene practices to control potential exposures during the implementation of the Spill Containment Program (See Section 9.0 of this HASP). ***Physical hazards:*** 1 & 2) Strains and sprains (lifting hazards)/Back Injuries – The predominant hazard associated with this activity is the movement of full or partially full 55-gallon drums of soils and/or water. To minimize hazards of this nature the following provisions shall be incorporated as applicable: - Use machinery (preferred method) or multiple personnel for heavy lifts - Use proper lifting techniques a Lift with your legs, not your back, bend your knees move as close to the load as possible, and ensure good hand holds are available. b Minimize the horizontal distance to the center of the lift to your center of gravity. c Minimize turning and twisting when lifting as the lower back is especially vulnerable at this time. d Break lifts into steps if the vertical distance (from the start point to the placement of the lift) is excessive. e Plan your lifts – Place heavy items on shelves between the waist and chest; lighter items on higher shelves. f. Periods of high frequency lifts or extended duration lifts should provide sufficient breaks to guard against fatigue and injury. In determining whether you can lift or move an item several factors must be considered, these are as follows: - Area available to maneuver the lift. - Area of the lift – Work place clutter, slippery surfaces, rough terrain - Cverall physical condition **3)** Compressions – Another hazard frequently associated with this task is the compression of hands and fingers when placing the containers on pallets. This typicaly occurs when rolling and lowering the container in its place. To combat this hazard, the following provision shall be employed: Material handling devices shall be used for moving drums within the satellite storage area. This includes drum dollies with pneumatic tires, drum grapplers, etc. to handle drums of IDW. These pieces of equipment are engineered to allow placement of these containers while keeping hands from pinch/compression points. **Reminder:** The drums you are attempting to move, lift and/or relocate may weigh on the average of - 55-Gallon container of purge or decontamination waters = 475 lbs. (including the container) - 55-Gallon container of soils (moist) = 750 lbs. (including the container) Satellite Storage Area – Emphasis has been placed on the physical surroundings and how they can influence the potential hazards associated with material handling aspects of this task. To further reduce material handling hazards, support spill containment and control, and sampling when necessary, the IDW storage area should be structured as follows: - Maximum 4-drums to a pallet with retaining ring bolt and label on the outside for easy access/reference. - Maintain a minimum of 4-feet between each row of pallets. This is the minimum distance necessary to wheel drums on a drum dolley - If the site is not secured, the satellite storage area shall be fenced and signs placed indicating the following: a. Primary Point of Contact (Preferably someone at the Base, and make sure they know they been identified as the Primary Point of Contact). b. Phone Number c. Emergency Contact (If different from the Primary) - Provide a Drum/Container Inventory to the Primary Point of Contact and to Emergency Services, if they deem it necessary. The inventory should contain a Each drum shall be assigned a unique identification number. This number shall be placed on the label and drum shell using a paint marker (Note: Donot paint the number on the lid as these have a tendency to get exchanged from time to time.) b Types of waste materials (Subsurface soils, drill cuttings; decon water, etc.) c Volumes (Full or level associated with the container after completion of the project location) d Where it was derived from (IDW should be separated by SWMU and media) e Dates (For all filled containers and at the completion of work for that area or SWMU) f. Contact – For more information **Note:** The extraction material within the immunoassay field test kit is methanol. Collection and accumulation of these materials will be considered flammable waste until properly qualified.	None Required, unless spill containment provisions are invoked. Then monitoring will proceed as described in the activity associated with the task when the materials were generated such as soil boring.	Level D - (Minimum Requirements) - Standard field attire (Sleeved shirt; long pants) - Safety shoes (Steel toe/shank) - Leather or canvas work gloves - *Safety glasses (When utilizing cables or slings to move the containers)* - *Hardhat (when overhead hazards exists, or identified as a operation requirement)* PPE changes may be made with the implementation of the Spill Containment Program. This represents the only anticipated modification to this level of protection.	Not required, unless the implementation of the Spill Containment Program is required due to a spill and/or release. At that point the decontamination procedures for those activities such as soil borings. The reference reflects the tasks conducted when the materials were generated.

TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES

Tasks/Operation/Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type And Action Levels	Personal Protective Equipment *(Items In Italics Are Deemed Optional As Conditions Or The FOL Or the SSO Dictate.)*	Decontamination Procedures
GPS Surveying – Sufficient paths will be opened to allow sample grids and locations to be marked. Once this is accomplished preferable routes will be selected and cleared to allow the movement of the DPT Rig and personnel.	***Chemical hazards:*** Significant exposure to site contaminants are not anticipated during this task. ***Physical hazards:*** 1) Slips, trips, and falls ***Natural hazards:*** 2) Inclement weather 3) Insect/animal bites or stings, poisonous plants, etc.	***Physical hazards:*** 1) Preview work locations and site lines for uneven and unstable terrain. Clear necessary vegetation, establish temporary means for traversing hazardous terrain (i.e. rope ladders, etc.) as necessary. A review of accident/injury statistics associated with land surveying identifies slips, trips, and falls as the number one injury, followed by cuts and lacerations, and animal/insect bites. ***Natural hazards:*** 2) Electrical storms or high winds - Suspend or terminate operations until directed otherwise by SSO. Harmful effects of the Sun - Care should be exercised when working outdoors due to harmful effects of the sun. To reduce the potential for sunburn and melanoma the following measures should be employed - Wear a hat that shades the face, neck, and ears. - Apply sunscreen with a SPF of 15 or higher liberally on any exposed skin at least 15 minutes before going outside, then at least every two hours, more if you are sweating a lot. - To the extent possible, plan/provide suitable equipment to offer shade to avoid the midday sun since the sun's ultraviolet rays are most intense between 10 A.M. and 4 P.M. and can damage your skin even on hazy days. - Wear wrap-around sunglasses to protect the eyes and delicate skin around them. 5) **Insect/Animal Bites and Stings** - This is considered a predominant hazard in this area. See control measures listed in Table 5-1 Removal of Vegetation See Section 4.0 of the TtNUS Health and Safety Guidance Manual for additional information concerning natural hazards.	Air monitoring is not required given the unlikelihood that airborne contaminants will be present. The potential for exposure to site contaminants during this activity is considered minimal.	Surveying activities shall be performed in Level D protection Level D Protection consists of the following: - Standard field dress including sleeved shirt and long pants - Shoes rugged lug sole for traction - *Snake chaps for heavily wooded area where encounters are likely.* - *Tyvek coveralls may be worn to provide additional protection against poisonous plants and insects, particularly ticks.* **Note:** The Safe Work Permit(s) for this task (See Attachment IV) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or corditions associated with any identified task.	**Personnel Decontamination** - A structured decontamination is not required as the likelihood of encountering contaminated media is considered remote. However, survey parties should inspect themselves and one another for the presence of ticks when exiting wooded areas, grassy fields, etc. This action will be employed to stop the transfer of these insects into vehicles, homes, and offices. In addition, early detection shall provide for early removal.
Decontamination of sampling equipment. The MacroCore Samper, cutting shoe and driverods are typically washed/rinsed at the DPT rig in 5-gallon buckets. It is anticipated that ths activity will take place at area of operation. Decontamination procedure for all non-dedicated equipment that may contact the sample media is as follows: 1. Remove heavy materials (soils, etc.) 2. Alconox or Liquinox detergent wash 3. Potable water rirse 4. Solvent rinse (Isopropanol) 5. DI water rinse 6. Air dry 7. Screen with FID to insure all contaminants as well as decontamination solvents have been removed.	Chemical hazards: 1) Previous analytical data identified chlorinated solvents as the primary contaminants of concern. It should be noted that source concentrations were determined to be insufficient to present an inhalation exposure threat. It is further assessed that exposure hazard during this activity is not anticipated/ Further information on these contaminants are provided in Section 6.1 and Table 6-1, primarily for informational purposes. 2) Decontamination fluids - Liquinox (detergent); isopropanol (decontamination solvent) Physical hazards: Natural hazards: 3) Inclement weather	1) and 2) Employ protective equipment to minimize contact with site contaminants and hazardous decontamination fluids. Control potential non-occupational exposures through good work hygiene practices (i.e., avoid hand to mouth contact; wash hands and face before breaks and lunch; minimize contact with contaminated media). Obtain and familiarize yourself with manufacturer's MSDS for any decontamination fluids used on-site. Solvents may only be used in well-ventilated areas, such as outdoors. Use appropriate PPE as identified on MSDS or within this HASP. All chemicals used must be listed on the Chemical Inventory for the site, and site activities must be consistent with the Hazard Communication Program provided in Section 5.0 of the TtNUS Health and Safety Guidance Manual and Table 5-1 Mobilization/Demobilization. 3) Suspend or terminate operations until directed otherwise by SSO.	Use visual observation to ensure all equipment has been properly cleaned. Scan with the FID to insure the removal of contamination and solvents. Positive results require additional wash or rinse procedures as applicable. The procedure will be repeated until no indication positive results are obtained on the monitoring instrument.	For sampling equipment (trowels, macrocore samplers, etc.), the following PPE is required Note: Consult MSDS for PPE guidance. Otherwise, observe the following. Level D Minimum requirements - - Standard field attire (Long sleeve shirt; long pants) - Safety shoes (Steel toe/shank) - Nitrile outer gloves over nitrile inner gloves - Safety glasses - *Impermeable apron* Note: The Safe Work Permit(s) for this task (See Attachment IV) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.	Personnel Decontamination will consist of a soap/water wash and rinse for reusable and non-reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable). The sequential procedure is as follows: Stage 1: Equipment drop, remove outer protective wrapping; personnel will wash hand tools and pass hand equipment through as necessary. Stage 2: Soap/water wash and rinse of outer boots and gloves Stage 3: Soap/water wash and rinse of the outer splash suit or apron as applicable Stage 4: Disposable PPE will be removed and bagged. Stage 5: Wash face and hands The FOL or the SHSO will be responsible for evaluating equipment arriving on-site, leaving the site, and between locations. No equipment will be authorized access, exit, or movement to another location without this evaluation.

6.0 HAZARD ASSESSMENT

This section provides information regarding the chemical, physical, and natural hazards associated with the sites to be investigated and the activities that are to be conducted as part of the scope of work. Table 6-1 provides information on potential chemical contaminants, including exposure limits, symptoms of exposure, physical properties, and air monitoring and sampling data.

6.1 CHEMICAL HAZARDS

The potential health hazards associated with NAVSTA Mayport include inhalation, ingestion, and dermal contact of various contaminants that may be present in shallow and deep soils. As the focus of this field investigation is to sample soils at multiple locations and depths, concentrations of the chemical hazards present are not fully determined. Contaminants identified include primarily

Chlorinated solvents

Due to age, dilution, and impurities these materials may not represent the pure compounds. The following information represents general categories of contaminants that may be encountered.

Chlorinated Solvents – These solvents generally express symptoms including

- Irritating at all points of contact. Chronic or elevated concentrations directly contacting the skin may result in dermatitis.

- Inhalation of high concentrations (not anticipated in an outdoor environment) can result in CNS effects including dizziness, blurred vision, overexcitement, narcotic effects, and unconsciousness. Systemic effects through inhalation can also result in altered (erratic) heart beat and possible cardiac arrest.

It is anticipated that the greatest potential for exposure to site contaminants is during intrusive activities (soil borings, sampling, etc.). Exposure to these compounds is most likely to occur through inhalation or dermal contact of contaminated soil or water, or through ingestion via hand-to-mouth contact during soil disturbance activities. For this reason, PPE and basic hygiene practices (e.g., washing face and hands before leaving site) will be extremely important. Given the nature of planned activities and that work will be conducted outside in the open air, and previously reported source concentrations, it is highly unlikely that any appreciable airborne concentrations will be present. Therefore, work is planned to be accomplished in Level D protection. However, regular monitoring of worker breathing zone in comparison to daily-

TABLE 6-1
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA
NAVAL STATION MAYPORT, FLORIDA

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
1,2-Dichloroethane see also Ethylene Dichloride	107-06-2	PID: I.P. 11.05 eV, 140% relative response ratio. FID: 80% response with FID.	Air sample using charcoal sorbent tube and carbon disulfide desorption with gas chromatography-flame ionization detector; Sample and analytical protocol in accordance with NIOSH Method #1003	OSHA: 50 ppm Ceiling 100 ppm 5-minute max peak in any 3-hr period. 200 ppm ACGIH: 10 ppm or 40 mg/m^3 NIOSH: 1 ppm 4 mg/m^3 STEL 2 ppm 8 mg/m^3 IDLH: 50 ppm	Inadequate - This compound has poor warning properties (odor threshold 26 ppm) OSHA allows the use of organic vapor cartridges in certain circumstances. **Recommended glove:** Polyvinyl alcohol >8.00 hrs; Viton 6.90 hrs; Teflon >24.00 hrs; Silver Shield >6.00 hrs	**Boiling Pt:** 182°F; 83°C **Melting Pt:** -31°F; -35°C **Solubility:** 0.9% **Flash Pt:** 56°F; 13°C **LEL/LFL:** 6.2% **UEL/UFL:** 16% **Vapor Density:** Not available **Vapor Pressure:** 64 mmHg @ 68° F; 20°C **Specific Gravity:** 1.24 **Incompatibilities:** Strong oxidizers and caustics, chemically active metals such as aluminum or magnesium powder, sodium and potassium. **Appearance and Odor:** Colorless liquic with a pleasant, chloroform-like odor.	Exposure to this substance may cause CNS depression, nausea, vomiting, dermatitis, and irritation of the eyes. Chronic overexposure may result in damage to the kidneys, liver, eyes (cornea opacity), skin and CNS.
Tetrachloroethylene See also Perchloroethylene PERK PCE	127-18-4	PID: I.P. 9.32 eV, relative response ratio 200% with 10.6 eV lamp. FID: 70% relative response ratio with a FID.	Air sample using charcoal tube; carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol shall proceed in accordance with OSHA Method #07, or NIOSH Method #1003.	ACGIH: 25 ppm or 170 mg/m^3 STEL 100 ppm or 685 mg/m^3 OSHA: 100 ppm Ceiling 200 ppm 5-minute max peak in any 3-hr period. 300 ppm IDLH: 150 ppm	Odor threshold for this substance has been determined to be at airborne concentrations of approximately 47 ppm, which is considered adequate. APR with organic vapor/acid gas cartridges should be used for escape purposes only. Exceedances over the recommended exposure limits requires the use of airline or airline/APR combination units. Recommended glove: Viton, PV alcohol 5-16 hrs; silver shield >6.00 hrs; teflon 10-24 hrs; and Nitrile in that order. The breakthrough time for the nitrile glove ranges between 1.5 - 5.5 hrs. during complete immersion.	**Boiling Pt: 250°F; 121°C** **Melting Pt: -2°F; 19°C** **Solubility: 0.02%** **Flash Pt: Not available** **LEL/LFL: Not available** **UEL/UFL: Not available** **Vapor Density: 5.83** **Vapor Pressure: 14 mmHg @ 77° F; 25°C** **Specific Gravity: 1.62 @ 77°F; 25° C** **Incompatibilities: Strong oxidizers, alkalis, fuming sulfuric acid, and chemically active metals. When heated to decomposition temperatures will emit toxic fumes of chlorine.** **Appearance and Odor: Colorless liquid with a mild chloroform like odor.**	Overexposure may result in irritation to eyes, nose, throat, and skin. Potential CNS effects including sleepiness, incoordination, headaches, hallucinations, distorted perceptions, and stupor (narcosis). Systemically, symptoms may result in nausea, vomiting, weakness, tremors, and cramps. Chronic exposures may result in dermatitis, enlarged tender liver, kidney, and lung damage. This material is considered a animal carcinogen (liver tumors), however, inadequate evidence exists concerning carcinogenic potential in humans.

established background levels will be performed. In the event that sustained, elevated breathing zone readings are detected, the initial response will be for workers to immediately retreat to an unaffected area. Work may resume only when background levels are regained. If background levels are not regained, the PHSO is to be notified immediately, and work can resume only in elevated levels of protection by observing the action levels and other specifications of this SSHP. Inhalation exposure will be monitored using FID.

Other sources of potential chemical exposure are decontamination fluids (e.g., Liquinox, isopropanol), analytical preservatives, and immunoassay field kit reagents. For any substances brought onto the site, the SSO is responsible for instituting a site-specific Hazard Communication Program (see Section 5.0 of the TtNUS Health and Safety Guidance Manual) and for collecting the appropriate Material Safety Data Sheets (MSDS) from the chemical manufacturers/suppliers. The SSO is also responsible for completing the Safe Work Permit for the applicable task using the appropriate MSDS. If you are not familiar with the hazards and/or control measures of a substance always review the MSDS prior to use. Unresolved questions can be directed to the SSO or the PHSO.

6.2 PHYSICAL HAZARDS

The physical hazards that may be present during the performance of site activities are summarized below:

- Slips, trips, and falls
- Lifting (strain/muscle pulls)
- Ambient temperature extremes (heat stress)
- Pinches and compressions
- Cuts and lacerations
- Vehicular traffic

These physical hazards are discussed in Table 5-1 as applicable to each site task. Further, these hazards are discussed in detail in Section 4.0 of the Health and Safety Guidance Manual.

6.3 NATURAL HAZARDS

Insect/animal bites and stings, poisonous plants, and inclement weather are natural hazards that may be present given the location of activities to be conducted. As previously discussed, this area is not a well maintained area and therefore hazards of this nature are considered to be predominant hazards.

For more information concerning these hazards see Section 4.0 of the HSGM. The following information is specific to the region and therefore not in the HSGM.

6.3.1 Insect Bites and Stings

Various insects and animals may be present and should be considered. For example, fire ants present a unique situation when working outdoors in the southern portion of the United States. Their aggressive behavior and their ability to sting repeatedly can pose a unique health threat. The sting injects venom (formic acid) that causes an extreme burning sensation. Pustules form which can become infected if scratched. Allergic reactions of people sensitive to the venom include dizziness, swelling, shock and in extreme cases unconsciousness and death. People exhibiting such symptoms should see a physician. Fire ants can be identified by their habitat. They build mounds in open sunny areas sometimes supported by a wall or shrub. The mound has no external opening. The size of the mound can range from a few inches across to some which are in excess of two feet or more in height and diameter. When disturbed they defend it by swarming out and over the mound, even running up grass blades and sticks.

Insect/animal bites and stings are difficult to control given the climate and environmental setting of NAVSTA Mayport. However, in an effort to minimize this hazard the following control measures will be implemented where possible.

- Commercially available bug sprays and repellents will be used whenever possible – Pesticides analytical screening includes chlordane, endrin, lindane, methoxychlor, toxaphene and heptachlor. Commercially available repellants may be used providing they don't contain substances which appear on the analytical list for pesticide analysis. Products such as Permanone should not be applied directly to the skin due to potential irritation. This product, when permitted for use, should be applied over clothing articles. Products such as DEET can be applied directly to the skin. In all cases follow the manufacturer's instructions.

- Where possible, loose-fitting and light-colored clothing with long sleeves should be worn. This will also aid in insect control by providing a barrier between the field person and the insects and to provide easy recognition of crawling insects against the lighter background. Pant legs should be secured to the work-boots using duct tape to prevent access by ticks. Mosquito nets are also recommended for use when commercially available repellents are not permitted.

- Clothing/limited body checks for ticks and other crawling insects should be conducted upon exiting heavily vegetated areas. Workers should perform a more detailed check of themselves when showering in the evening. Ticks prefer moist areas of the body (arm-pits, genitals, etc.) and will migrate to those locations. However, in many of the most recent reported cases attachment has occurred on the back near the shoulders and within the abdomen area.

- The FOL/SSO will preview access routes and work areas in an effort to identify physical hazards including nesting areas in and around the work sites. These areas will be flagged and communicated to site personnel.

- The FOL/SSO must determine if site personnel (through completion of Medical Data Sheets), suffer allergic reactions to bee and other insect stings and bites. Field crew members who are allergic to bites should have their emergency kit containing antihistamine and a preloaded syringe of epinephrine or any prescribed antidote readily available.

Any allergies (insect bites, bee stings, etc.) must be reported on the Medical Data Sheet and to the SSO.

6.3.1.1 Tick and Mosquito Transmitted Illnesses and Diseases

Ticks and mosquitoes have been identified in the transmission of diseases including Lyme's disease and malaria. Warm months (Spring through early Fall) are the most predominant time for this hazard. Information concerning Lyme's Disease including recognition, evaluation, tick removal, and control is provided in Section 4.0 of the TtNUS Health and Safety Guidance Manual.

Malaria may occur when a mosquito or other infected insect sucks blood from an infected person, and the insect becomes the carrier to infect other hosts. The parasite reproduces within the mosquito, and is then passed on to another person through the biting action. Acute symptoms include chills accompanied by fever and general flu like symptoms. This generally terminates in a sweating stage. These symptoms may recur every 48 to 72 hours.

<u>West Nile Virus (WNV)</u>

The WNV is a type of virus that causes encephalitis or inflammation of the brain. The virus is transmitted by mosquitoes that acquire it from infected birds. Symptoms generally occur five to 15 days following the bite of an infected mosquito, and range from a slight fever or headache to rapid onset of severe headache, high fever, stiff neck, muscle weakness, disorientation and death.

WNV encephalitis has no specific treatment. In northern areas of the world, WNV encephalitis cases occur primarily in the late summer or early fall. In southern climates, where temperatures are milder, WNV encephalitis can occur year round. There is no vaccine.

Precautions include:

- Limit outdoor activities during peak mosquito times – at dusk and dawn.

- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Apply insect repellent according to manufacturer's instruction to exposed skin. An effective repellent will contain 20% to 30% DEET (N,N-diethyl-meta-toluamide). Avoid products containing more than 30% DEET.
- Spray clothing with repellents containing permethrin or DEET, mosquitoes may bite through thin clothing.

6.3.2 Snakes of Florida

The poisonous snakes found in Florida are the coral snake, cottonmouth or water moccasin, copperhead, and the pygmy, timber, and diamondback rattlesnakes. Initial efforts will be directed to avoid, where possible, nesting and territorial areas. The snakes mentioned below are found throughout Florida and maybe encountered in every county and on many of the coastal islands. These snakes may be encountered in almost any habitat. The rattlesnakes, copperhead and coral snakes are most commonly found in palmetto flatlands, pine woods, abandoned fields, and brushy and grassy areas. Given the setting where this work will occur the cottonmouth is the most likely to be encountered.

Coral Snake

Coral Snakes are extremely poisonous snakes with small, blunt heads and brightly colored bodies. They do not strike as effectively as other venomous snakes, but they bite. They are dangerous if stepped on or handled. The *eastern* coral snake generally ranges from 20 to 40 inches in length. Its body is encircled by broad black and red bands separated by narrow yellow ones. Just behind the snake's black snout is a wide yellow band followed by a black band. Some are covered with black pigment that hides much of the red color. Some nonpoisonous snakes look like coral snakes because they have similar coloring. But coral snakes have red bands next to yellow ones. The harmless snakes have red bands next to black ones.

Cotton Mouth or Water Moccasin

The water moccasin is a pit viper. It has a hollow, or pit, in the side of its head, between and slightly below the eye and nostril. Several harmless water snakes have a broad head like the moccasin, but they lack the pit. Adult water moccasins are about 3 ½ feet long, though some grow to more than 5 feet long. They usually have broad dark bands across their bodies. Water moccasins feed on a wide variety of animals, including frogs, fish, small mammals, and birds. Water moccasins are most often seen in watery places, in the swampy backwaters of rivers and streams, and on marshy lakeshores. The bite of the water moccasin is highly dangerous and may be fatal. This snake is also called a cottonmouth because when

threatened it throws back its head and flashes its white-lined mouth as a warning signal. One characteristic of the water moccasin is that it will strike multiple times.
Based on the habitat this snake is the most likely to be encountered.

Copperhead

Copperhead is also a poisonous pit viper. Its body has broad chestnut-red bands. Most copperheads are about 2 ½ feet long while the largest grow to about 4 feet. The copperhead bites people more often than most rattlesnakes, partly because it is silent and smaller, and is not so quickly noticed. The bite is seldom fatal to adults. This reptile usually eats rodents and other small mammals by killing them with their poison and swallowing them whole. Sometimes the snake eats insects and frogs. The copperhead can be identified by the presence of a pit in front of and below each eye. The snake's nostril is in front of the pit.

Rattlesnake

The rattlesnake is a pit viper with a rattle on the end of its tail. The rattle is used to warn enemies to stay away. However, sometimes they give no warning before they bite. The rattlesnake always lifts its tail when it sounds where as harmless snakes that mimic the rattlesnake move their tail back and forth on top of dry leaves or grass.

The eastern diamondback rattler is the heaviest of the poisonous snakes, though not the longest. It gets its name because diamond-shaped blotches edged with yellow cover its body. Diamondbacks rarely grow over feet long.

Pigmy rattlesnakes are short, relatively thick-bodied snakes. They have a dark line through the eye on each side of the face and a series of dark, roughly circular spots running down the center of the back. These dorsal spots interrupt a thin reddish-orange stripe that runs along the midbody line. Pigmy rattlesnakes first line of defense is to remain motionless. Their color pattern makes them hard to see in grass or leaf litter, especially when they are coiled. They almost never warn approaching people by sounding their rattle. They are likely to remain motionless until stepped on or over.

The Timber Rattlesnake has a large body and ranges in length of five to six feet. It has a broad triangular head, vertical pupils and heat sensitive pits. The body color may be yellow, gray, dark brown or black, with dark, V-shaped crossbands across the back. The head is usually unpatterned and is covered with many small scales. A distinct rattle on the end of a darkly colored tail produces a buzzing sound when vibrated.

Rattlesnakes send out poison through two long hollow fangs, in its upper jaw. The poison forms in a pair of glands behind each eye on the upper jaw. The rattlesnake's fangs are folded back in the mouth when not in use. When an angry rattlesnake strikes, the fangs are erected and the mouth opened wide. Most rattlesnakes eat birds, small mammals, amphibians and reptiles. The larger rattlers rank among the most dangerous of snakes and should be avoided.

Some common sense control measures to avoid being bitten include the following:

- Leave snakes alone. Many people are bitten because they try to kill a snake or get a closer look at it.
- Stay out of tall grass unless you wear thick leather boots and snake chaps. Remain within cleared areas as much as possible.
- Keep hands and feet out of areas you can't see. Don't pick up rocks or deadfall unless you are out of a snake's striking distance. (A snake can strike 1/2 to 2/3 its length.) If you must move these items to clear an access routes always pull the item towards yourself to provide a shield in case snakes are underneath.
- Be cautious and alert when climbing over debris, rocks, and deadfall.

6.3.2.1 Snake Bite

However, should field personnel come in contact with these animals and receive a bite, the following actions are necessary:

- Obtain a detailed description of the snake. This and the bite mark will enable medical personnel administering medical aid to provide prompt and correct antidotes, as necessary.

- Immobilize the bite victim to the extent possible. Physical exertion will mobilize the toxins (if poisonous varieties) from the bite point systemically through the body.

- Apply a pressure wrap (for extremities), just above and over the bite area. With a couple wraps of the pressure wrap in place over the bite area, apply a splint, and continue the application of the pressure wrap. The purpose for the splint is to restrict the movement of the extremity, this along with the pressure wrap will aid in restricting the toxins from leaving the site of the bite.

- Seek medical attention immediately.

6.3.3 Alligators

Alligators are indigenous to southeastern portion of the United States and may be present in ponds, swamps, drainage channels, and other wet areas. Alligators are fairly inactive in the winter months when the water temperatures are cool; their metabolism slows down and there is little need for food. The breeding season is mostly during April and May (but may begin as early as mid-February); male and female move around more during this time. Nests are constructed by the female during June and July. The female will build a nest of leaves and vegetation up to 6 feet across and several feet high. She lays and buries her eggs in the center of this mound, allowing the warmth of the pile to incubate the eggs. Females typically lay over 50 eggs and each egg is about 3 inches long. The eggs incubate for about 9 weeks, and the female will watch and defend the nest during this time. As the young hatch, they "peep" and the female will assist them by digging them out of the nest. Newborn alligators are about 9 inches long and will stay near the female for up to a year. The female will continue to protect the young during this period.

Alligators are very protective of their domain during courtship and nesting. Alligators can outrun humans for short distances.

Other indication of their presence includes slides (areas marked by entering and exiting the water) and areas of cleared access for purposes of sunning (internal thermal regulation).

Control Measures

- Treat alligators with extreme caution. Never approach an alligator, either on land or in the water.
- If sampling involves entering areas where alligators may be present, use an "alligator-watch" as a lookout.
- When accessing sample locations always ensure you have left yourself a clear means of retreat. Obtain the sample as quickly as possible and immediately leave the area.

6.3.4 Poisonous Plants

Various plants which can cause allergic reactions may be encountered during field work. These include, poison ivy, poison oak, and poison sumac. Contact with these plants may occur when clearing vegetation for access to work areas, or as a result of movement through these plants. An irritating, allergic reaction can occur after direct contact with the plant or indirect contact through some piece of equipment or clothing article. Oils are transferred from the plant to exposed skin, clothing, or piece of equipment. The degree of the irritating, allergic reaction can vary significantly from one person to the next.

Protective measures to control and minimize the effects of this hazard may include, but not be limited to, the following:

- Identify plants for field personnel.

  - Poison Ivy - Characterized by climbing vines, three leaf configuration ovate to elliptical in shape, deep green leaves with a reddish tint, greenish flowers, and white berries.

  - Poison Sumac - Characterized as a tall bush of the sumac family bearing compound leaves (7-13 entire leaflets), branched from a central axis, drooping, with axillary clusters of white fruit: However, these white fruits and berries may exist only during pubescent stages.

  - Poison oak - Characterized as similar to poison ivy consisting of a shrub, stems erect, 0.3 to 2.0 meters tall, leaflets consist of broad thick lobes coarsely serrated configuration, denser at the base, less so than the top.

- Protective measures may include wearing disposable garments such as Tyvek when clearing brush. These may be carefully removed and disposed of along with any oils accumulated from the plants.

- Personal Hygiene - The oils obtained from the plants will only elicit an allergic response when the person's bare skin layer is contacted. This can be aggravated when skin pores are open (perspiring), or through breaks in the skin such as cuts, nicks, scratches, etc. This can also be accomplished when using excessively hot water for cleaning the skin, which also causes pores to open. Prior to break time, lunchtime, etc. personnel should wash with cool water and soap to remove as much of the oils as possible. In heavily vegetated areas of these plants, additional measures including barrier creams and blocks may be used to further prevent the oils from accessing and penetrating the skin.

These plants present an airborne sensitization hazard when burned. Burning is not anticipated to occur as part of this scope of work and therefore will not be addressed.

6.3.5 Inclement Weather

Project tasks under this Scope of Work will be performed outdoors. As a result, inclement weather may be encountered. In the event that adverse weather conditions arise (electrical storms, hurricanes, extreme heat and/or cold, etc.), the FOL and/or the SHSO will be responsible for temporarily suspending or terminating activities until hazardous conditions no longer exist.

Tropical Storms and Hurricanes

As Florida is in a tropical storm, hurricane prone area, the following information is supplied to explain the potential severity of these natural hazards. The decision to curtail operations and evacuate the area should be made by the FOL, TOM, and the HSM.

During the early summer to late fall months, typically from the first of June through the end of November, disturbances migrating off the West Coast of Africa move into the Atlantic Ocean and develop into tropical cyclones known as tropical storms and hurricanes. Many of these cyclones become strong enough to threaten life and property along the Eastern Seaboard and Gulf Coast. There are three main threats associated with tropical storms and hurricanes:

- High winds
- Excessive rainfall
- Storm surge

The impacts of high winds and excessive rainfall occur hours, maybe days, before the tropical storm or hurricane makes landfall. However, the storm surge accompanies the storm or hurricane at the time that landfall occurs.

High Winds

Sustained winds vary greatly from storm to storm, but can range from 39 to 73 miles per hour (wind speeds associated with a tropical storm) to greater than 74 miles per hour (minimal wind speed for a Category 1 hurricane). The table below compares the type of storm or hurricane and the corresponding wind speed.

TABLE 6-2
TROPICAL STORM/HURRICANE RATING SCALE

TYPE	CATEGORY*	WINDS (MPH)
Tropical Depression	NA	>35-38
Tropical Storm	NA	39 – 73
Hurricane	1	74 – 95
Hurricane	2	96 – 110
Hurricane	3	111 – 130
Hurricane	4	131 – 155
Hurricane	5	>155

NA – Not Applicable

* Based on the Saffir-Simpson scale

In addition to strong winds, there is the threat of debris (i.e. building material, trees, etc.) becoming airborne projectiles as they are carried by the high winds. Thunderstorms and tornadoes embedded within the tropical storm or hurricane can further increase the wind speeds on a localized level.

Excessive Rainfall

Heavy rains associated with tropical storms and hurricanes also vary greatly from storm to storm. On average, an inch of rainfall an hour is not uncommon with major hurricanes, somewhat lesser amounts with tropical storms. However, the primary threat is not the intensity of rain, but the duration of rainfall. Since many tropical storms and hurricanes are slow-movers, they are capable of producing sustained heavy rainfall over a long period of time. It is not uncommon for an area to receive nearly 20 inches of rain in 24 hours. Under these conditions, street; stream and creek flooding is inevitable only to be exacerbated by locally heavier rains from thunderstorms.

Storm Surge

The storm surge is an abnormal rise in sea level accompanying a hurricane or tropical storm. The height of the storm surge (usually measured in feet) is the difference in sea level from the observed level (during the storm) and the level that would have occurred in the absence of the storm or hurricane. The more intense the storm or hurricane the higher the storm surge. Storm surges become even higher if they occur during periods of high tide.

The following table defines some of the terminology and possible calls to action regarding tropical cyclones:

TABLE 6-3
TROPICAL STORM/HURRICANE
WATCH AND WARNING

STORM DESCRIPTION	DEFINITION	ACTION
Tropical Storm Watch	Tropical storm conditions are possible in the specified area of the watch, usually within 36 hours	Weather conditions should be monitored for further advisories. Prepare for possible evacuation by local officials
Tropical Storm Warning	Tropical storm conditions are expected in the specified area of the warning, usually within 24 hours.	Work should be suspended in areas where lightning, high winds and rainfall could pose a threat to life. Mandatory evacuations may be enforced by local officials.
Hurricane Watch	Hurricane conditions are possible in the specified area of the watch, usually within 36 hours.	Weather conditions should be monitored for further advisories. Prepare for possible evacuation by local officials
Hurricane Warning	Hurricane conditions are expected in the specified area of the warning, usually within 24 hours.	Mandatory evacuations will most likely be enforced by local officials.

A NOAA Weather Radio is the best means to receive watches and warnings from the National Weather Service. The National Weather Service continuously broadcasts updated hurricane advisories that can be received by widely available NOAA Weather Radios.

Temperature Extremes – Heat Stress Indication

Temperature extremes are considered inclement weather. Steps should be taken to the extent possible protect site personnel from the effects of heat stress and the sun. Control measures include

- Watch for signs of heat stress/exhaustion, See Table 6-4.
- Provide fluid replacement
- Provide adequate number of breaks within a cooler environment.

Care should be exercised when working outdoors due to harmful effects of the sun. To reduce the potential for sunburn and melanoma the following measures should be employed

- Wear a hat that shades the face, neck, and ears.
- Apply sunscreen with a SPF of 15 or higher liberally on any exposed skin at least 15 minutes before going outside, then at least every two hours, more if you are sweating a lot.

- Plan/provide suitable equipment to offer shade to avoid the midday sun since the sun's ultraviolet rays are most intense between 10 A.M. and 4 P.M. and can damage your skin even on hazy days. Portable canopies over the sample station are an example of this.
- Wear wrap-around sunglasses to protect the eyes and delicate skin around them.

TABLE 6-4

HEAT STRAIN SYMPTOMS

STOP WORK if Any Worker Demonstrates Any Of The Following

Heart Rate	Sustained (several minutes) heart rate minus worker's age > than 180 beats per minute (bpm) measured at any time.
Body Core Temperature	> 101.3°F (38.5° C)
Recovery Heart Rate	> 110 bpm (Measured 1 minute after peak work effort)
Other symptoms	Sudden and sever fatigue, nausea, dizziness, or headache

Individuals May Be At Greater Risk of Heat Stress If:

Profuse sweating is sustained over hours
Weight loss over a shift is > 1.5% of beginning body weight
24-hour urinary sodium excretion is less than 50 nmoles

For more information on heat stress see Section 4.0 of the HSGM.

7.0 AIR MONITORING

Direct reading instruments will be used at the site to detect and evaluate the presence of site contaminants and other potentially hazardous conditions. As a result, specific air monitoring measures and requirements are established in Table 5-1 pertaining to the specific hazards and tasks of an identified operation.

7.1 INSTRUMENTS AND USE

Instruments will be used primarily to monitor source points and worker breathing zone areas, while observing instrument action levels. Action levels are discussed in Table 5-1 as they may apply to a specific task or location.

7.1.1 Flame Ionization Detector

In order to accurately monitor for any substances which may present an exposure potential to site personnel, a Flame Ionization Detector (FID) will be used. This instrument will be used to monitor potential source areas and to screen the breathing zones of employees during site activities. The FID has been selected because it is capable of detecting the organic vapors of concern and it operates better than a PID in this environment.

Prior to the commencement of any field activities, the background levels of the site must be determined and noted. Daily background readings will be taken away from any areas of potential contamination. These readings, any influencing conditions (i.e., weather, temperature, humidity) and site location must be documented in the field operations logbook or other site documentation (e.g., sample log sheet).

7.1.2 Hazard Monitoring Frequency

Table 5-1 presents the frequencies that hazard monitoring will be performed as well as the action levels which will initiate the use of elevated levels of protection. The SSO may decide to increases these frequencies based on instrument responses and site observations. The frequency at which monitoring is performed will not be reduced without the prior consent of the PHSO or SHM.

7.2 INSTRUMENT MAINTENANCE AND CALIBRATION

Hazard monitoring instruments will be maintained and pre-field calibrated by the TtNUS Equipment Manager or supplying vendor. Operational checks and field calibration will be performed on the instruments each day prior to their use. Field calibration will be performed on instruments according to

manufacturer's recommendations (for example, the FID must be field calibrated daily and an additional field calibration must be performed at the end of each day to determine any significant instrument drift). These operational checks and calibration efforts will be performed in a manner that complies with the employees health and safety training, the manufacturer's recommendations, and with the applicable manufacturer standard operating procedure (copies of which shall be supplied with the instrument and maintained on site for reference). Calibration efforts must be documented. Figure 7-1 is provided for documenting these calibration efforts. This information may instead be recorded in a field operations logbook, provided that the information specified in Figure 7-1 is recorded. This required information includes the following:

- Date calibration was performed
- Individual calibrating the instrument
- Instrument name, model, and serial number
- Any relevant instrument settings and resultant readings (before and after) calibration
- Identification of the calibration standard (lot no., source concentration, supplier)
- Any relevant comments or remarks

FIGURE 7-1

DOCUMENTATION OF FIELD CALIBRATION

SITE NAME: _____ PROJECT NO.:_____

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		

8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS

8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING

This section specifies health and safety training and medical surveillance requirements for both Tetra Tech NUS and subcontractor personnel participating in on site activities.

8.1.1 Requirements For Tetra Tech NUS, Inc. and Subcontractor Personnel

Tetra Tech NUS and subcontractor personnel who will engage in field associated activities as described in this HASP must have:

- Completed 40 hours of introductory hazardous waste site training or equivalent work experience as defined in OSHA Standard 29 CFR 1910.120(e).
- Completed 8-Hour Refresher Training, if the identified persons had introductory training more than 12 months prior to site work.
- Completed 8-hour Supervisory training in accordance with 29 CFR 1910.120(e)(4), if their assigned function will involve the supervision of subordinate personnel.

Documentation of introductory training or equivalent work experience, supervisory, and refresher training as well as site-specific training will be maintained at the site. Copies of certificates or other official documentation will be used to fulfill this requirement. Copies of this documentation will be provided to the COR.

8.2 SITE-SPECIFIC TRAINING

TtNUS will provide site-specific training to TtNUS employees and subcontractor personnel who will perform work on this project.

Figure 8-1 will be used to document the provision and content of the project-specific and associated training. Site personnel will be required to sign this form prior to commencement of site activities.

TtNUS will conduct a pre-activities training session prior to initiating site work. Additionally, a brief meeting will be held daily to discuss operations planned for that day. At the end of the workday, a short meeting may be held to discuss the operations completed and any problems encountered. This activity will be supported through the use of a Safe Work Permit System (See Section 10.2).

8.3 MEDICAL SURVEILLANCE

8.3.1 Medical Surveillance Requirements for Tetra Tech NUS and Subcontractor Personnel

Tetra Tech NUS and subcontractor personnel participating in project field activities will have had a physical examination. Physical examinations shall meet the minimum requirements of paragraph (f) of OSHA 29 CFR 1910.120. The physical examinations will be performed to ensure that personnel are medically qualified to perform hazardous waste site work using respiratory protection.

Documentation for medical clearances will be maintained at the job site and made available, as necessary. Subcontractor personnel may use an alternative documentation for this purpose. The "Subcontractor Medical Approval Form" can be used to satisfy this requirement, or a letter from an officer of the company. The letter should state that the persons listed in the letter participate in a medical surveillance program meeting the requirements contained in paragraph (f) of Title 29 of the Code of Federal Regulations (CFR), Part 1910.120, entitled "Hazardous Waste Operations and Emergency Response." The letter should further state the following:

- The persons listed have had physical examinations under this program within the frequency as determined sufficient by their occupational health care provider
- Date of the exam
- The persons identified have been cleared, by a licensed physician, to perform hazardous waste site work and to wear positive- and negative- pressure respiratory protection.

A sample Subcontractor Medical Approval Form and form letter have been provided to eligible subcontractors in the Bid Specification package. Copies of the documentation attesting to the medical surveillance/clearance shall be provided to the COR.

8.3.2 Requirements for Field Personnel

Each field team member, including subcontractors and visitors, entering the exclusion zone(s) shall be required to complete and submit a copy of the Medical Data Sheet that is available in Attachment VI of this HASP. This shall be provided to the SSO, prior to participating in site activities. The purpose of this document is to provide site personnel and emergency responders with additional information that may be necessary in order to administer medical attention.

8.4 SUBCONTRACTOR EXCEPTION

If through the execution of their contract elements the subcontractor will not enter the exclusion zone and there is no potential for exposure to site contaminants, subcontractor personnel may be exempt from the

training and medical surveillance requirements with the exception of Section 8.2. Examples of subcontractors who may qualify as exempt from training and medical surveillance requirements may include surveyors who perform surveying activities in site perimeter areas or areas were there is no potential for exposure to site contaminants and support or restoration services. **Use of this Subcontractor Exception is strictly limited to the authority of the SHM.**

FIGURE 8-1
SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing remedial investigation activities at NAVSTA Mayport, Florida and that I have received site-specific training which included the elements presented below:

- Names of designated personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present on site
- Use of personal protective equipment
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- Contents of the Site Safety and Health Plan
- Emergency response procedures (evacuation and assembly points)
- Incipient response procedures
- Review of the contents of relevant Material Safety Data Sheets
- Review Safe Work Permits

My signature below indicates that I have been given the opportunity to ask questions and that my questions have been answered to my satisfaction, and that the dates of my training and medical surveillance indicated below are accurate.

Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam

9.0 SPILL PREVENTION AND CONTAINMENT PROGRAM

9.1 SCOPE AND APPLICATION

This program applies to the single or aggregate accumulation of bulk storage materials (over 55-gallons). As the classification of certain materials such as IDW is unknown, these materials will be treated as hazardous, pending laboratory certification to the contrary. The types of materials for which this program will apply are as follows:

- Investigative Derived Wastes (IDW) such as decontamination fluids and soil cuttings
- Resource Storage – Limited fuel and lubricant storage

The spill containment and control will be engaged any time there is a release of the above-identified materials from a containment system or vessel. This spill containment program will be engaged in order to minimize associated hazards.

9.2 POTENTIAL SPILL AREAS

Potential spill areas will be periodically monitored in an ongoing attempt to prevent and control further potential contamination of the environment. Currently, limited areas are vulnerable to this hazard including:

- Resource deployment
- Waste transfer
- Central staging

It is anticipated that the IDW generated as a result of this scope of work will be containerized, labeled, and staged to await further analyses. The results of these analyses will determine the method of disposal.

9.3 CONTAINMENT AREAS

In order to facilitate leak and spill inspection and response, and to minimize potential hazards which may impact the integrity of the storage containers, the staging area for these substances will be structured as follows:

9.3.1 IDW

- 55 Gallon Drums (United Nations 1A2 configurations) – 4 Drums to a Pallet; labels and the retaining ring bolt and nut on the outside of each drum to facilitate easy access; Minimum 4-feet between each row of pallets. The decision to construct a bermed and lined area will be the decision of project management.

- Storage Tank – Polyethylene Construction – Tank shall be placed into a bermed enclosure of sufficient size to accommodate 110% of anticipated volume (Largest container plus 10% for rainwater and container displacement).

Regardless of container types selected, the staging area will be identified as a Satellite Storage Area with proper signage, points of contact in the event of an emergency, alternate contacts, and identification of stored material (i.e., Purge or decontamination waters, soil cuttings, etc.).

An Inventory Log will be maintained by the FOL regarding types of IDW and volumes generated. An updated Inventory List will be provided by the FOL to the designated Emergency Response Agency or Base Contact during days off and between shifts or phases of operations.

9.3.2 Flammable/POL Storage

Flammable Storage [i.e., fuels, decontamination solvents (Isopropanol)] and Petroleum/oil/lubricants (POL) will require proper dispensing containers and necessary storage for cumulative volumes in excess of 25 gallons. Storage and dispensing will comply with the following requirements:

- The fuels, which will be stored and dispensed from portable containers, will utilize safety cans.
- Portable hand held storage containers will be labeled per Hazard Communication requirements.
- Larger volumes stored for fueling equipment will be stored in approved mobile Above Ground Storage Tanks with secondary containment capable of holding the tank volume plus 10%.
- Portable flammable liquid storage tanks will be properly grounded and will have bonding capabilities for the transfer of loading and off-loading of its contents.
- Dispensing locations will be supported by a Fire Extinguisher positioned no closer than 50 feet from the storage tank, properly mounted and identified.
- The storage location will be well marked with proper signage, protective bumper poles and will have straight through access/egress for vehicles.

9.4 MATERIALS HANDLING

To minimize the hazards associated with moving drums and containers (i.e, lifting, pinch and compression points) material handling will be supported in the following manner:

- A drum cart with pneumatic tires will be required, if drums are used for IDW storage. This cart will be used to relocate drums within the staging and satellite storage location.

- In addition, a mechanized means such as a suitably equipped skid loader or back-hoe will be provided to move IDW containers from the field location to the staging and satellite storage location. This piece of equipment will also be used in site clearance and restoration as deemed appropriate and necessary.

Other means of material handling will be evaluated by the SHSO based on their ability to minimize or eliminate material handling hazards.

9.5 LEAK AND SPILL DETECTION

To establish an early detection of potential spills or leaks, a periodic walk-around by the personnel staging or disposing of drums or in the Resource Deployment area will be conducted during working hours to visually determine that storage vessels are not leaking. If a leak is detected, the FOL will be notified and the Spill Containment/Control Response Plan as specified in Section 9.8 will be engaged. Inspections will be documented in the project logbook.

9.6 PERSONNEL TRAINING AND SPILL PREVENTION

Personnel will be instructed in the procedures for incipient spill prevention, containment, and collection of hazardous materials in the site-specific training. The FOL and/or the SHSO will serve as the Spill Response Coordinators for this operation, should the need arise. Personnel within the Project team will be designated as incident spill response team. These persons will insure all of the necessary supplies are available to enable them to perform their function in support of the EAP.

9.7 SPILL PREVENTION AND CONTAINMENT EQUIPMENT

The following represents the minimum equipment that will always be maintained at the staging areas the purpose of supporting this Spill Containment/Control Plan.

- Sand, clean fill, vermiculite, or other non combustible absorbent (Oil-dry)

- Extra Drums (55-gallon U.N. 1A2) should the need to transfer material from leaking containers arise.
- Pumps (Gas or Electric necessary for transferring liquids from leaking containers)/tubing
- Shovels, rakes, and brooms
- Container labels
- Personal Protective Equipment
  - Nitrile outer gloves
  - Splash Shield
  - Impermeable over-boots
  - Rain suits

9.8 SPILL CONTAINMENT/CONTROL RESPONSE PLAN

This section describes the procedures the Tetra Tech NUS field personnel will employ upon the detection of a spill or leak.

- Notify the SSO or FOL immediately upon detection of a leak or spill. Initiate incidental response measures, remove non-essential personnel.

- Employ the personal protective equipment stored at the staging area. Take immediate actions to stop the leak or spill by plugging or patching the container or raising the leak to the highest point in the vessel. Spread the absorbent material in the area of the spill, covering it completely.

- Transfer the material to a new vessel; collect and containerize the absorbent material. Label the new container appropriately. Await analyses for treatment and disposal options.

- Re-containerize spills, including 2-inch of top cover (if over soils) impacted by the spill. Await test results for treatment or disposal options.

It is not anticipated that a spill will occur that the field crew cannot handle. Should this occur, notification of the appropriate Emergency Response agencies will be carried out by the FOL or SSO in accordance with the procedures specified in Section 2.0 of this HASP.

10.0 SITE CONTROL

Site operations and control will be facilitated through the use of established work zones and security and control of those zones. These activities will minimize the impact and spread of contaminants brought to the surface through subsurface investigative methods as well as protect personnel and visitors within these zones during ongoing operations.

10.1 WORK ZONES

Tetra Tech NUS will delineate and use work zones in conjunction with decontamination procedures to prevent the spread of contaminants to other areas of the site. A three-zone approach will be used for work at this site; an Exclusion Zone, a Contamination Reduction Zone, and a Support Zone. These will be used to control access to the work areas, restricting the general public, avoiding potentials to spread any contaminants, and to protect individuals who are not cleared to enter by way of training and/or medical surveillance qualifications.

10.1.1 Exclusion Zone

An Exclusion Zone will be established at each sampling point/location. The purpose of the exclusion zone is to define an area where a more rigorous protocol for workers protection is employed to protect personnel from chemical and physical hazards associated with the tasks to be conducted. Exclusion zone size and dimensions will vary based on activities. Area dimensions will be influenced by the following considerations:

- Physical and topographical features of the site
- Weather conditions
- Field and analytical measurements of air and environmental contaminants
- Air dispersion calculations
- Potential for explosion and dispersion
- Physical, chemical and toxicological properties of the contaminants being investigated
- Tasks to be conducted
- Decontamination procedures
- Potential for exposure

As conditions change the dimensions of the exclusion zone will change. However, the following dimensions represent a starting point from which the exclusion zones will be expanded:

- DPT - Soil Boring/Subsurface Soil Sampling. The exclusion zone for this activity will be set at the height of the mast, plus five feet surrounding the point of operation, or 25-feet whichever is greater. This distance will also apply when subsurface soil sampling from behind these type rigs.

- Clearing and grubbing. The exclusion zone for this activity will be set at 10-feet surrounding someone with a brush hook or machete.

- Decontamination operation. The exclusion zone for this activity will be set at 10 feet surrounding the gross contamination wash and rinse as well as 25-feet surrounding any heavy equipment decontamination.

- Investigative Derived Waste (IDW) area will be constructed and barricaded. Only authorized personnel will be allowed access.

Exclusion zones shall remain marked until the SSO has evaluated the restoration effort and has authorized changing the zone status.

Exclusion zones will be marked using barrier tape, traffic cones and/or drive poles. Signs will be posted to inform and direct site personnel and site visitors.

10.1.2 Contamination Reduction Zone

The contamination reduction zone will be split to represent two separate functions. The first function will be a control/supply point for supporting exclusion zone activities. The second function, which may take place a sufficient distance from the exclusion zone is the decontamination of personnel and equipment.

In order to move from the exclusion zone to a separate location the following activities will be used:

- As samplers move from location to location during sampling activities, dedicated sampling devices and PPE will be washed of gross contamination, removed, separated, and bagged. Personnel will use hygienic wipes, such as Handy Wipes, as necessary for personnel decontamination until they can access the centralized decontamination unit. At the first available opportunity personnel will wash their face and hands. This is critical prior to breaks and lunch when contamination can be transferred to the mouth through hand to mouth contact.

- Muddy over-boots and gloves may be required to go through a gross contamination wash at the exclusion zone. These items will then be cleaned thoroughly at the centralized decontamination unit.

- Potentially contaminated tooling along with PPE will be wrapped, when necessary, for transport to the decontamination area. These items will be disposed of as general refuse.

- Upon completion of the assigned tasks the personnel will move through the central decontamination area to clean reusable PPE and field equipment. Based on ambient conditions medical evaluations may take place at the termination point of the decontamination line. These evaluations will include pulse rate, oral temperature, breathing rate to evaluate physiological demands on site personnel. As stated earlier, these evaluations will be based on ambient conditions and acclimation periods.

10.1.3 Support Zone

The Support Zone will consist of a field trailer, storage, lay-down areas, or some other uncontaminated, controlled point. The Support Zone for this project will include a staging area where site vehicles can be parked, equipment will be unloaded, and where food and drink containers will be maintained. The support zones will be established in clean areas of the site.

10.2 SAFE WORK PERMITS

Exclusion Zone work conducted in support of this project will be performed using Safe Work Permits to guide and direct field crews on a task by task basis. An example of the Safe Work Permit is included in Figure 10-1. The daily meetings conducted by the FOL/SSO will further support these work permits. The use of these permits will ensure that site-specific considerations and changing conditions are incorporated into the planning effort. Safe Work Permits will require the signatures of either the FOL or the SSO. Personnel engaged in on-site activities must be made aware of the elements indicating levels of protection and precautionary measures to be used.

The use of these permits will establish and provide for reviewing protective measures and hazards associated with each operation. This HASP will be used as the primary reference for selecting levels of protection and control measures. The Safe Work Permit will take precedence over the HASP when more conservative measures are required based on specific site conditions.

Upon completion of the work for which the Safe Work Permit was assigned, the Safe Work Permit will be turned into the FOL or the SSO. Concerns, complaints, and suggestions may be made on the reverse of

the Safe Work Permit for consideration by the FOL and/or the SSO. Permits turned in with suggestions, difficulties, or complaints will be forwarded to the PHSO for review.

The Safe Work Permit and the HASP will serve as the primary reference for work place evaluations and audits conducted to determine if the task is being conducted under the direction conveyed by the HASP and the Safe Work Permit.

10.3 SITE MAP

Once the areas of contamination, access routes, topography, dispersion routes are determined, a site map will be generated and adjusted as site conditions change. This map will be posted to illustrate up-to-date information of contaminants and adjustment of zones and access points. This map will be posted at the field support trailer.

10.4 BUDDY SYSTEM

Personnel engaged in on-site activities will practice the "buddy system" to ensure the safety of the personnel involved in this operation.

10.5 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS

Tetra Tech NUS and subcontractor personnel will provide MSDSs for all chemicals brought on-site. The MSDSs will be maintained in a central location (i.e., temporary office) and will be available for anyone to review upon request. The SSO will be responsible for implementing a site-specific Hazard Communication Program (See Section 5.0 of the TtNUS Health and Safety Guidance Manual). This includes collection and reviewing the MSDSs, creation and maintenance of an accurate Chemical Inventory Listing, addressing container labeling and personnel training issues, and other aspects of Hazard Communication.

Personnel are directed to review the applicable MSDS prior to use if they are unfamiliar with the potential hazards or recommended control measures of the materials they are using. It should be noted that two MSDSs have been provided in Attachment VII. These MSDSs are for the Immunoassay Kits only. The FOL and/or the SSO will still be required to collect other MSDSs for chemicals brought on-site.

FIGURE 10-1
SAFE WORK PERMIT

Permit No. _____ Date: _____ Time: From _____ to ____

SECTION I: General Job Scope (To be filled in by person performing work)

I. Work limited to the following (description, area, equipment used): _____

_____

II. Names: _____

_____

III. On-site Inspection conducted ☐ Yes ☐ No Initials of Inspector _____ _____
TtNUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

IV. Protective equipment required
Level D ☐ Level B ☐
Level C ☐ Level A ☐

Respiratory equipment required
Yes ☐ See Reverse
No ☐

Modifications/Exceptions: _____

_____

V. Chemicals of Concern	Action Level(s)	Response Measures

Note to FOL and/or SHSO: All selections listed in items VI through IX must be completed checking Yes, No, or NA as it may apply.

VI. Additional Safety Equipment/Procedures

Hardhat	☐ Yes	☐ No	Hearing Protection (Plugs/Muffs)	☐ Yes	☐ No
Safety Glasses	☐ Yes	☐ No	Safety belt/harness	☐ Yes	☐ No
Chemical/splash goggles	☐ Yes	☐ No	Radio	☐ Yes	☐ No
Splash Shield	☐ Yes	☐ No	Barricades	☐ Yes	☐ No
Splash suit/coveralls (Type:_____)	☐ Yes	☐ No	Gloves (Type _____)	☐ Yes	☐ No
Steel toe/shank Workboots	☐ Yes	☐ No	Work/rest regimen	☐ Yes	☐ No

Chemical Protective Over-boots (Type:_____) ☐ Yes ☐ No

Modifications/Exceptions: _____

_____

VII. Procedure review with permit acceptors	Yes	NA		Yes	NA
Safety shower/eyewash (Location & Use)	☐	☐	Emergency alarms	☐	☐
Procedure for safe job completion	☐	☐	Evacuation routes	☐	☐
Contractor tools/equipment inspected	☐	☐	Assembly points	☐	☐

VIII. Site Preparation	Yes	No	NA
Utility Locating and Excavation Clearance completed	☐	☐	☐
Equipment and Foot Traffic Routes Cleared and Established	☐	☐	☐
Physical Hazards Barricaded and Isolated	☐	☐	☐
Emergency Equipment Staged	☐	☐	☐

IX. Additional Permits required (Hot work, confined space entry, excavation, etc.). ☐Yes ☐No
If yes, See SHSO for appropriate permit

X. Special instructions, precautions: _____

_____

_____

Permit Issued by: _____ Permit Accepted by: _____

10.6 COMMUNICATION

It is anticipated that site personnel will be working in close proximity during proposed field activities. In the event that site personnel are in isolated areas or are separated by significant distances, a supported means of communication between field crews will be utilized. Two-way radio communication devices, if needed, will be used only with NAVSTA Mayport approval.

External communications will be accomplished utilizing telephones at predetermined and approved locations or through cellular phones. External communication will primarily be used for the purpose of resource and emergency resource communications. Prior to the commencement of site activities, the FOL will determine and arrange for telephone communications, if it is determined a cellular means will not be used.

10.7 SITE VISITORS

Potential site visitors that may be encountered during the performance of the field work could include the following:

- Personnel invited to observe or participate in operations by Tetra Tech NUS.
- Regulatory personnel (i.e., DOD, FDEP, EPA, OSHA, etc.)
- USACE and NAVSTA Mayport personnel
- Other authorized visitors

Non-DOD personnel working on this project are required to gain initial access to the base by coordinating with the TtNUS TOM or designee and following established base access procedures.

Once access to the base is obtained, personnel who require access to Tetra Tech NUS work sites (areas of ongoing operations) will be required to obtain permission from the FOL and the Base Contact. Upon gaining access to the work site, site visitors wishing to observe operations in progress will be required to meet the minimum requirements as stipulated below.

- Site visitors will be routed to the FOL, who will sign them into the field logbook. Information to be recorded in the logbook will include the individuals name (proper identification required), who they represent, and the purpose for the visit. The FOL is responsible for ensuring that site visitors are always escorted while on site.

- Site visitors will be required to produce the necessary information supporting clearance on to the site. This includes information attesting to applicable training (40-hours of HAZWOPER training required for Southern Division Navy Personnel), and medical surveillance as stipulated in Section 8.3, of this document. In addition, to enter the sites operational zones during planned activities, visitors will be required to first go through site-specific training covering the topics stipulated in Section 8.2 of this HASP.

Once the site visitors have completed the above items they will be permitted to enter the site and applicable operational areas. Visitors are required to observe the protective equipment and site restrictions in effect at the work areas visited. Any visitors not meeting the requirements as stipulated in this plan for site clearance will not be permitted to enter the site operational zones during planned activities. Any incidence of unauthorized site visitation will cause on-site activities to be terminated until that visitor can be removed. Removal of unauthorized visitors will be accomplished with support form the Base Contact, if necessary. At a minimum, the Base Contact will be notified of any unauthorized visitors.

10.8 SITE SECURITY

As this activity will take place at a Navy facility, the first line of security will be provided by the base gate restricting the general public. The second line of security will take place at the work site referring interested parties to the FOL and Base Contact.

Security at the work areas will be accomplished using field personnel. This is a multiple person operation, involving multiple operational zones. Tetra Tech NUS personnel will retain complete control over active operational zones.

The Base Contact will serve as the focal point for base personnel and interested parties and will serve as the primary enforcement contact.

10.9 SANITATION AND BREAK AREAS

This section will address the following items:

- Toilets
- Potable water
- Showers and change rooms
- Break Areas

10.9.1 Toilets

One toilet will be provided for every 20 people. All toilets will be unisex and will have locking doors. The toilet provided will either be a chemical toilet and service provider or the flush toilet readily accessible at a predetermined approved location.

10.9.2 Potable Water

Potable water as well as electrolyte balance sports drinks such as Gatorade will be provided to the field crews for fluid replacement, as it is necessary under conditions of ambient temperature extremes. Storage and dispensing will proceed as follows:

- All containers will be clean and replenished daily.
- All containers will clearly marked as to their contents (Potable Water – Drinking Water Only; Gatorade, etc.).
- Dispensing locations will be placed in identified break areas within the support zone. The most likely location will be at a support vehicle staged near the work area. This will serve as an area for cooling or warming as well as an identified food and drink consumption area.
- If larger containers are used, dispensing cups will be provided.
- The coolers used for storage of potable drinks and cups will be stored in plastic bags away from potentially contaminating materials when not in use.

Fluid intake recommendations may be made based on the medical evaluations conducted at the end of the decontamination process, as necessary based on ambient conditions.

10.9.3 Showers and Change Rooms

Based on this scope and duration of this project shower facilities and locker rooms will not be required.

10.9.4 Break Areas

Given the location and the time of the year structured suitable locations for work breaks and warming/cooling regimens will be necessary. Shelters such as canopies should be provided for protection from the sun as well as to provide a suitable area to permit cooling in this hot environment.

11.0 CONFINED SPACE ENTRY

It is not anticipated, under the proposed scope of work, that confined space and permit-required confined space activities will be conducted. **Therefore, personnel under the provisions of this SSHP are not allowed, under any circumstances, to enter confined spaces**.

A confined space is defined as a space that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work, and
- Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry), and
- Is not designed for continuous employee occupancy.

A Permit-Required Confined Space is a confined space that has one or more of the following charcateristics:

- Contains or has a potential to contain a hazardous atmosphere.
- Contains a material that has the potential to engulf an entrant.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.
- Contains any other recognized, serious, safety or health hazard.

For further information on confined space, consult the Health and Safety Guidance Manual or call the PHSO. If confined space operations are to be performed as part of the scope of work, detailed procedures and training requirements will have to be addressed.

12.0 MATERIALS AND DOCUMENTATION

The TtNUS FOL shall ensure the following materials/documents are taken to the project site and used when required.

- A complete copy of this SSHP
- Health and Safety Guidance Manual
- Health and Safety Policy
- Incident Reports
- Medical Data Sheets
- Material Safety Data Sheets for chemicals brought on site, including decon solutions, fuels, sample preservatives, calibration gases, immunoassay reagents, etc.
- A full-size OSHA Job Safety and Health Poster (posted in the site trailers)
- Training/Medical Surveillance Documentation Form (Blank)
- Emergency Contact and Maps to the Hospital Information (Section 2.0, extra copy for posting). Multiple copies should be made and placed in each site vehicle.

12.1 MATERIALS TO BE POSTED OR MAINTAINED AT THE SITE

The following documentation is to be posted or maintained at the site for quick reference purposes. In situations where posting these documents is not feasible, (such as no office trailer), these documents should be separated and immediately accessible such as in a 3-ring binder.

Chemical Inventory Listing (posted) - This list represents chemicals brought on-site, including decontamination solutions, sample preservations, immunoassay reagents, etc.. This list should be posted in a central area.

Material Safety Data Sheets (MSDS) (maintained) - The MSDSs should also be in a central area accessible to site personnel. These documents should match the listings on the chemical inventory list for substances used on-site. It is acceptable to have these documents within a central folder and the chemical inventory as the table of contents.

The OSHA Job Safety & Health Protection Poster (posted) - this poster, as directed by 29 CFR 1903.2 (a)(1), should be conspicuously posted in places where employees will readily notice. The FOL shall ensure that this poster is not defaced, altered, or covered by other material.

Site Clearance (maintained) - This list is found within the training section of the SSHP (See Figure 8-2). This list identifies site personnel, dates of training (including site-specific training), and medical surveillance. The lists indicates not only clearance but also status. If personnel do not meet these requirements, they do not enter the site while site personnel are engaged in activities.

Emergency Phone Numbers and Directions to the Hospital(s) (posted) - This list of numbers and directions will be maintained at telephone communications points and in each site vehicle.

Medical Data Sheets/Cards (maintained) - Medical Data Sheets will be filled out by on-site personnel and filed in a central location. The Medical Data Sheet will accompany any injury or illness requiring medical attention to the medical facility. a copy of this sheet or a wallet card will be given to personnel to be carried on their person.

Hearing Conservation Standard (29 CFR 1910.95) (posted) - This standard will be posted anytime hearing protection or other noise abatement procedures are used. Hearing protection will be used during DPT activities completing this scope of work.

Personnel Monitoring (posted) - Results generated through personnel sampling (levels of airborne toxins, noise levels, etc.) will be posted to inform individuals of the results of that effort.

Placards and Labels (maintained) - Where chemical inventories have been separated because of quantities and incompatibilities, these areas will be conspicuously marked using DOT placards and acceptable (Hazard Communication 29 CFR 1910.1200(f)) labels.

The purpose of maintaining or posting this information, as stated above, is to allow site personnel quick access. Variations concerning location and methods of presentation are acceptable, providing the objective is accomplished.

13.0 GLOSSARY

ACGIH	American Conference of Governmental Industrial Hygienists
CFR	Code of Federal Regulations
CNS	Central Nervous System
COR	Contracting Officer
CRZ	Contamination Reduction Zone
DOD	Department of Defense
FID	Flame Ionization Detector
FOL	Field Operations Leader
N/A	Not Available
NAVSTA	Naval Station
NIOSH	National Institute Occupational Safety and Health
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PEL	Permissible Exposure Limit
PG	Professional Geologist
PHSO	Project Health and Safety Officer
PM	Project Manager
PPE	Personal Protective Equipment
PVC	Poly Vinyl Chloride
SAP	Sampling and Analysis Plan
SHM	Safety and Health Manager
SSHP	Site Safety and Health Plan
SSO	Site Safety Officer
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
USACE	United States Army Corps of Engineers
WP	Work Plan

ATTACHMENT I

INJURY/ILLNESS PROCEDURE AND REPORT FORM

TETRA TECH NUS, INC.

INJURY/ILLNESS PROCEDURE
WORKER'S COMPENSATION PROGRAM

WHAT YOU SHOULD DO IF YOU ARE INJURED OR DEVELOP AN ILLNESS AS A RESULT OF YOUR EMPLOYMENT:

- Stop work as needed to ensure no further harm is done.
- If injury is minor, obtain appropriate first aid treatment.
- If injury or illness is severe or life threatening, obtain professional medical treatment at the nearest hospital emergency room. Check with your office location or project health and safety plan for specific instructions.
- If incident involves an injury, illness, or chemical exposure on a project work site, follow instructions in the Health & Safety Plan.
- Immediately report any injury or illness to your supervisor or office manager. In addition, you must contact your Human Resources representative, Marilyn Duffy at (412) 921-8475, and the Corporate Health and Safety Manager, Matt Soltis at (412) 921-8912 within 24 hours of the injury. You will be required to complete an Injury/Illness Report. You may also be required to participate in a more detailed investigation with the Health Sciences Department.
- In the event of a serious near-miss incident, a "Serious Near Miss Report" (Form AR-2, available online at https://go2.tetratech.com under "Departments", "Health and Safety", "Accident Reporting Procedures", hyperlink for "Serious Near Miss Report") must be completed and faxed to the Corporate Health and Safety Manager within 48 hours.
- If further medical treatment is needed, our insurance carrier, ACE, will provide information on the authorized providers customized to the location of the injured employee. You can find this information by accessing the website of ACE's claims handler, ESIS, at : **www.esis.com**. These providers are to be used for treatment of Worker's Compensation injuries subject to the laws of the state in which you work.

ADDITIONAL QUESTIONS REGARDING WORKER'S COMPENSATION:

Contact your local Human Resources representative (Marilyn Duffy), Corporate Health and Safety Manager (Matt Soltis), or Corporate Administration in Pasadena, California, at (626) 351-4664.

Worker's compensation is a state-mandated program that provides medical and disability benefits to employees who become disabled due to job related injury or illness. Tetra Tech, Inc. and its subsidiaries pay premiums on behalf of their employees. This program is based on a no-fault system, and benefits are provided for covered events as an exclusive remedy to the injured employee regardless of fault. The types of injuries or illnesses covered and the amount of

benefits paid are regulated by the state worker's compensation boards and vary from state to state. Corporate Administration in Pasadena is responsible for administering the Company's worker's compensation program. The following is a general explanation of worker's compensation provided in the event that you become injured or develop an illness as a result of your employment with Tetra Tech or any of its subsidiaries. Please be aware that the term used for worker's compensation varies from state to state.

WHO IS COVERED:

All employees of Tetra Tech, whether they are on a full-time, part-time or temporary status, working in an office or in the field, are entitled to worker's compensation benefits from the first day of work. All employees must follow the above injury/illness reporting procedures. If you are working out-of-state and away from your home office, you are still eligible for worker's compensation benefits.

Consultants, independent contractors, and employees of subcontractors and employees from temporary employment agencies are not covered by Tetra Tech's Worker's Compensation plan.

WHAT IS COVERED:

If you are injured or develop an illness caused by your employment, worker's compensation benefits are available to you subject to the laws of the state you work in. Injuries do not have to be serious; even injuries treated by first aid practices are covered and must be reported.

TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT

To: _____
Subsidiary Health and Safety Representative

cc: _____
Workers Compensation Administrator

Project name: _____

Project number: _____

Prepared by: _____

Position: _____

Office: _____

Telephone number: _____

Fax number: _____

Information Regarding Injured or Ill Employee

Name: _____

Home address: _____

_____

Home telephone number: _____

Occupation (regular job title): _____

Department: _____

Office: _____

Gender: M ☐ F ☐ No. of dependents: _____

Marital status: _____

Date of birth: _____

Social security number: _____

Date of Accident: _____

Time Employee Began Work: _____

Time of Accident: _____ a.m. ☐ p.m. ☐

☐ Check if time cannot be determined

Location of Incident

Street address: _____

City, state, and zip code: _____

County: _____

Was place of accident or exposure on employer's premises? Yes ☐ No ☐

Information About the Incident

What was the employee doing just before the incident occurred? Describe the activity as well as the tools, equipment, or material the employee was using. Be specific. Examples: "Climbing a ladder while carrying roofing materials"; "Spraying chlorine from hand sprayer"; "Daily computer key-entry"

What Happened? Describe how the injury occurred. Examples: "When ladder slipped on wet floor, worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed soreness in wrist over time"

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.

TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)

Information About the Incident (Continued)

What was the injury or illness? Describe the part(s) of the body affected and how it was affected. Be more specific than "hurt," "pain," or "sore." Examples "Strained back"; "Chemical burn, right hand"; "Carpal tunnel syndrome, left wrist"

Describe the Object or Substance that Directly Harmed the Employee: Examples: "Concrete floor"; "Chlorine"; "Radial arm saw." If this question does not apply to the incident, write "Not applicable."

Did the employee die? Yes ☐ No ☐ Date of death: _____

Was employee performing regular job duties? Yes ☐ No ☐

Was safety equipment provided? Yes ☐ No ☐ Was safety equipment used? Yes ☐ No ☐

Note: Attach any police reports or related diagrams to this report.

Witness (Attach additional sheets for other witnesses.)

Name: _____

Company: _____

Street address: _____

City: _____ State: _____ Zip code: _____

Telephone number: _____

Medical Treatment Required? ☐ Yes ☐ No ☐ First aid only

Name of physician or health care professional: _____

If treatment was provided away from the work site, provide the information below.

Facility name: _____

Street address: _____

City: _____ State: _____ Zip code: _____

Telephone number: _____

Was the employee treated in an emergency room? ☐ Yes ☐ No

Was the employee hospitalized over night as an in-patient? ☐ Yes ☐ No

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.

TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)

Corrective Action(s) Taken by Unit Reporting the Accident:

Corrective Action Still to be Taken (by whom and when):

Name of Tetra Tech employee the injury or illness was first reported to: _____

Date of Report: _____ **Time of Report:** _____

I have reviewed this investigation report and agree, to the best of my recollection, with its contents.

Printed Name of Injured Employee	Telephone Number
Signature of Injured Employee	Date

The signatures provided below indicate that appropriate personnel have been notified of the incident.

Title	Printed Name	Signature	Telephone Number	Date
Office Manager				
Project Manager				
Site Safety Coordinator or Office Health and Safety Representative				

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.

TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)

To Be Completed by the Subsidiary Health and Safety Representative

Classification of Incident:

☐ Injury ☐ Illness

Result of Incident:

☐ First aid only

☐ Days away from work

☐ Remained at work but incident resulted in job transfer or work restriction

☐ Incident involved days away and job transfer or work restriction

☐ Medical treatment only

No. of days away from work _____

Date employee left work _____

Date employee returned to work _____

No. of days placed on restriction or job transfer: _____

OSHA Recordable Case Number _____

To Be Completed by Human Resources

Social security number: _____

Date of hire: _____ Hire date for current job: _____

Wage information: $ _____ per ☐ Hour ☐ Day ☐ Week ☐ Month

Position at time of hire: _____

Current position: _____ Shift hours: _____

State in which employee was hired: _____

Status: ☐ Full-time ☐ Part-time Hours per week: _____ Days per week: _____

Temporary job end date: _____

To Be Completed during Report to Workers Compensation Carrier

Date reported: _____ Reported by: _____

Confirmation number: _____

Name of contact: _____

Field office of claims adjuster: _____

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.

ATTACHMENT II

USACE ENG 3394

ACCIDENT INVESTIGATION REPORT FORM AND INSTRUCTIONS

(For Safety Staff only)	REPORT NO.	EROC CODE	**UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT** *(For Use of this Form See Help Menu and USACE Suppl to AR 385-40)*	**REQUIREMENT CONTROL SYMBOL: CEEC-S-8(R2)**

1. ACCIDENT CLASSIFICATION

PERSONNEL CLASSIFICATION	INJURY/ILLNESS/FATAL	PROPERTY DAMAGE	MOTOR VEHICLE INVOLVED	DIVING
GOVERNMENT ☐ CIVILIAN ☐ MILITARY	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ CONTRACTOR	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ PUBLIC	☐ FATAL ☐ OTHER		☐	

2. PERSONAL DATA

a. Name *(Last, First, MI)*	b. AGE	c. SEX ☐ MALE ☐ FEMALE	d. SOCIAL SECURITY NUMBER	e. GRADE

f. JOB SERIES/TITLE	g. DUTY STATUS AT TIME OF ACCIDENT	h. EMPLOYMENT STATUS AT TIME OF ACCIDENT
	☐ ON DUTY ☐ TDY ☐ OFF DUTY	☐ ARMY ACTIVE ☐ ARMY RESERVE ☐ VOLUNTEER ☐ PERMANENT ☐ FOREIGN NATIONAL ☐ SEASONAL ☐ TEMPORARY ☐ STUDENT ☐ OTHER *(Specify)*

3. GENERAL INFORMATION

a. DATE OF ACCIDENT *(month/day/year)*	b. TIME OF ACCIDENT *(Military time)* hrs	c. EXACT LOCATION OF ACCIDENT	d. CONTRACTOR'S NAME (1) PRIME: (2) SUBCONTRACTOR:

e. CONTRACT NUMBER	f. TYPE OF CONTRACT	g. HAZARDOUS/TOXIC WASTE ACTIVITY
☐ CIVIL WORKS ☐ MILITARY ☐ OTHER *(Specify)*	☐ CONSTRUCTION ☐ SERVICE ☐ A/E ☐ DREDGE ☐ OTHER *(Specify)*	☐ SUPERFUND ☐ DERP ☐ IRP ☐ OTHER *(Specify)*

4. CONSTRUCTION ACTIVITIES ONLY *(Fill in line and corresponding code number in box from list - see help menu)*

a. CONSTRUCTION ACTIVITY	(CODE) #	b. TYPE OF CONSTRUCTION EQUIPMENT	(CODE) #

5. INJURY/ILLNESS INFORMATION *(Include name on line and corresponding code number in box for items e, f & g - see help menu)*

a. SEVERITY OF ILLNESS/INJURY (CODE) #	B. ESTIMATED DAYS LOST	C. ESTIMATED DAYS HOSPITALIZED	D. ESTIMATED DAYS RESTRICTED DUTY

e. BODY PART AFFECTED	f. NATURE OF ILLNESS / INJURY	g. TYPE AND SOURCE OF INJURY/ILLNESS
PRIMARY (CODE) #	(CODE) #	TYPE (CODE) #
SECONDARY (CODE) #		SOURCE (CODE) #

6. PUBLIC FATALITY *(Fill in line and correspondence code number in box - see help menu)*

a. ACTIVITY AT TIME OF ACCIDENT (CODE) #	b. PERSONAL FLOATATION DEVICE USED?
	☐ YES ☐ NO ☐ N/A

7. MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE	b. TYPE OF COLLISION	c. SEAT BELTS	USED	NOT USED	NOT AVAILABLE
☐☐ PICKUP/VAN ☐☐ AUTOMOBILE ☐☐ TRUCK ☐☐ OTHER *(Specify)*	☐ SIDE SWIPE ☐ HEAD ON ☐ REAR END ☐ BROADSIDE ☐ ROLL OVER ☐ BACKING ☐ OTHER *(Specify)*	(1) FRONT SEAT			
		(2) REAR SEAT			

8. PROPERTY/MATERIAL INVOLVED

a. NAME OF ITEM	B. OWNERSHIP	C. $ AMOUNT OF DAMAGE
(1)		
(2)		
(3)		

9. VESSEL/FLOATING PLANT ACCIDENT *(Fill in line and correspondence code number in box from list - see help menu)*

a. TYPE OF VESSEI/FLOATING PLANT (CODE) #	b. TYPE OF COLLISION/MISHAP (CODE) #

10. ACCIDENT DESCRIPTION *(Use additional paper, if necessary)*

See attached page.

11. CAUSAL FACTOR(S) *(Read Instruction Before Completing)*

a. (Explain YES answers in item 13)	YES	NO
DESIGN: Was design of facility, workplace or equipment a factor?	☐	☐
INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor?	☐	☐
PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor?	☐	☐
OPERATING PROCEDURES: Were operating procedures a factor?	☐	☐
JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred?	☐	☐
HUMAN FACTORS: Did any human factors such as, size or strength of person, etc., contribute to accident?	☐	☐
ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident?	☐	☐

a. *(CONTINUED)*	YES	NO
CHEMICAL AND PHYSICAL AGENT FACTORS: Did exposure to chemical agents, such as dust, fumes, mists, vapors or physical agents, such as, noise, radiation, etc., contribute to accident?	☐	☐
OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc., contribute to the accident?	☐	☐
SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task?	☐	☐
PERSONAL PROTECTIVE EQUIPMENT: Did the improper selection, use or maintenance of personal protective equipment contribute to the accident?	☐	☐
DRUGS/ALCOHOL: In your opinion, was drugs or alcohol a factor to the accident	☐	☐

b. WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT?

☐ YES *(If yes, attach a copy.)* ☐ NO

12. TRAINING

a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK?	b. TYPE OF TRAINING.	c. DATE OF MOST RECENT FORMAL TRAINING.
☐ YES ☐ NO	☐ CLASSROOM ☐ ON JOB	(Month) (Day) (Year)

13. FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT; INCLUDE DIRECT AND INDIRECT CAUSES *(See instruction for definition of direct and indirect causes.) (Use additional paper, if necessary)*

a. DIRECT CAUSE

See attached page.

b. INDIRECT CAUSE(S)

See attached page.

14. ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S).

DESCRIBE FULLY:

See attached page.

15. DATES FOR ACTIONS IDENTIFIED IN BLOCK 14.

a. BEGINNING (Month/Day/Year)	b. ANTICIPATED COMPLETION (Month/Day/Year)		
c. SIGNATURE AND TITLE OF SUPERVISOR COMPLETING REPORT CORPS _____ CONTRACTOR _____	d. DATE *(Mo/Da/Yr)*	e. ORGANIZATION IDENTIFIER *(Div, Br, Sect)*	f. OFFICE SYMBOL

16. MANAGEMENT REVIEW *(1st)*

a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

17. MANAGEMENT REVIEW *(2nd - Chief Operations, Construction, Engineering, etc.)*

a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

18. SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW

a. ☐ CONCUR b. ☐ NON CONCUR c. ADDITIONAL ACTIONS/COMMENTS

SIGNATURE	TITLE	DATE

19. COMMAND APPROVAL

COMMENTS

COMMANDER SIGNATURE	DATE

*U.S. GOVERNMENT PRINTING OFFICE: 1993-0-791-757

10. ACCIDENT DESCRIPTION *(Continuation)*

13a. DIRECT CAUSE *(Continuation)*

13b. INDIRECT CAUSES *(Continuation)*

14. ACTION(S) TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE(S) *(Continuation)*

GENERAL. Complete a separate report for each person who was *injured, caused,* or *contributed* to the accident (excluding uninjured personnel and witnesses). Use of this form for reporting USACE employee first-aid type injuries not submitted to the Office of Workers' Compensation Programs (OWCP) shall be at the descretion of the FOA commander. Please type or print legibly. Appropriate items shall be marked with an "X" in box(es). If additional space is needed, provide the information on a separate sheet and attach to the completed form. Ensure that these instructions are forwarded with the completed report to the designated management reviewers indicated in sections 16. and 17.

INSTRUCTIONS FOR SECTION 1 — ACCIDENT CLASSIFICATION. *(Mark All Boxes That Are Applicable.)*

a. GOVERNMENT. Mark "CIVILIAN" box if accident involved government civilian employee; mark "MILITARY" box if accident involved U.S. military personnel.
   (1) INJURY/ILLNESS/FATALITY — Mark if accident resulted in any government civilian employee injury, illness, or fatality that requires the submission of OWCP Forms CA-1 (injury), CA-2 (illness), or CA-6 (fatality) to OWCP; mark if accident resulted in military personnel lost-time or fatal injury or illness.
   (2) PROPERTY DAMAGE — Mark the appropriate box if accident resulted in any damage of $1000 or more to government property (including motor vehicles).
   (3) VEHICLE INVOLVED — Mark if accident involved a motor vehicle, *regardless* of whether "INJURY/ILLNESS/FATALITY" or "PROPERTY DAMAGE" are marked.
   (4) DIVING ACTIVITY — Mark if the accident involved an in-house USACE diving activity.

b. CONTRACTOR.
   (1) INJURY/ILLNESS/FATALITY — Mark if accident resulted in any contractor lost-time injury/illness or fatality.
   (2) PROPERTY DAMAGE — Mark the appropriate box if accident resulted in any damage of $1000 or more to contractor property (including motor vehicles).
   (3) VEHICLE INVOLVED — Mark if accident involved a motor vehicle, *regardless* of whether "INJURY/ILLNESS/FATALITY" or "PROPERTY DAMAGE" are marked.
   (4) DIVING ACTIVITY — Mark if the accident involved a USACE Contractor diving activity.

c. PUBLIC.
   (1) INJURY/ILLNESS/FATALITY — Mark if accident resulted in public fatality or permanent total disability. (The "OTHER" box will be marked when requested by the FOA to report an unusual non-fatal public accident that could result in claims against the government or as otherwise directed by the FOA Commander).
   (2) VOID SPACE — Make no entry.
   (3) VEHICLE INVOLVED — Mark if accident resulted in a fatality to a member of the public and involved a motor vehicle, *regardless* of whether "INJURY/ILLNESS/FATALITY" is marked.
   (4) VOID SPACE — Make no entry.

INSTRUCTIONS FOR SECTION 2 — PERSONAL DATA

a. NAME — (MANDATORY FOR GOVERNMENT ACCIDENTS. OPTIONAL AT THE DISCRETION OF THE FOA COMMANDER FOR CONTRACTOR AND PUBLIC ACCIDENTS). Enter last name, first name, middle initial of person involved.

b. AGE — Enter age.

c. SEX — Mark appropriate box.

d. SOCIAL SECURITY NUMBER — (FOR GOVERNMENT PERSONNEL ONLY) Enter the social security number (or other personal identification number if no social security number issued).

e. GRADE — (FOR GOVERNMENT PERSONNEL ONLY) Enter pay grade. Example: O-6; E-7; WG-8; WS-12; GS-11; etc.

f. JOB SERIES/TITLE — For *government civilian employees* enter the pay plan, full series number, and job title, e.g. GS-0810/Civil Engineer. For *military personnel* enter the primary military occupational specialty (PMOS), e.g., 15A30 or 11G50. For *contractor employees* enter the job title assigned to the injured person, e.g. carpenter, laborer, surveyor, etc.,

g. DUTY STATUS — Mark the appropriate box.
   (1) ON DUTY — Person was at duty station during duty hours or person was away from duty station during duty hours but on official business at time of the accident.
   (2) TDY - Person was on official business, away from the duty station and with travel orders at time of accident. Line-of-duty investigation required.
   (3) OFF DUTY - Person was not on official business at time of accident

h. EMPLOYMENT STATUS — (FOR GOVERNMENT PERSONNEL ONLY) Mark the most appropriate box. If "OTHER" is marked, specify the employment status of the person.

INSTRUCTION FOR SECTION 3 — GENERAL INFORMATION

a. DATE OF ACCIDENT — Enter the month, day, and year of accident.

b. TIME OF ACCIDENT — Enter the local time of accident in military time. Example: 1430 hrs (not 2:30 p.m.).

c. EXACT LOCATION OF ACCIDENT — Enter facts needed to locate the accident scene. (installation/project name, building number, street, direction and distance from closest landmark, etc.,).

d. CONTRACTOR NAME
   (1) PRIME — Enter the exact name (title of firm) of the prime contractor.
   (2) SUBCONTRACTOR — Enter the name of any subcontractor involved in the accident.

e. CONTRACT NUMBER — Mark the appropriate box to identify if contract is civil works, military, or other: if "OTHER" is marked, specify contract appropriation on line provided. Enter complete contract number of prime contract, e.g., DACW 09-85-C-0100.

f. TYPE OF CONTRACT — Mark appropriate box. A/E means architect/engineer. If "OTHER" is marked, specify type of contract on line provided.

g. HAZARDOUS/TOXIC WASTE ACTIVITY (HTW) — Mark the box to identify the HTW activity being performed at the time of the accident. For Superfund, DERP, and Installation Restoration Program (IRP) HTW activities include accidents that occurred during inventory, predesign, design, and construction. For the purpose of accident reporting, DERP Formerly Used DoD Site (FUDS) activities and IRP activities will be treated separately. For Civil Works O&M HTW activities mark the "OTHER" box.

INSTRUCTIONS FOR SECTION 4 — CONSTRUCTION ACTIVITIES

a. CONSTRUCTION ACTIVITY — Select the *most appropriate* construction activity being performed at time of accident from the list below. Enter the activity name and place the corresponding code number identified in the box.

CONSTRUCTION ACTIVITY LIST

1. MOBILIZATION
2. SITE PREPARATION
3. EXCAVATION/TRENCHING
4. GRADING (EARTHWORK)
5. PIPING/UTILITIES
6. FOUNDATION
7. FORMING
8. CONCRETE PLACEMENT
9. STEEL ERECTION
10. ROOFING
11. FRAMING
12. MASONRY
13. CARPENTRY
14. ELECTRICAL
15. SCAFFOLDING/ACCESS
16. MECHANICAL
17. PAINTING
18. EQUIPMENT/MAINTENANCE
19. TUNNELING
20. WAREHOUSING/STORAGE
21. PAVING
22. FENCING
23. SIGNING
24. LANDSCAPING/IRRIGATION
25. INSULATION
26. DEMOLITION

b. TYPE OF CONSTRUCTION EQUIPMENT—Select the equipment involved in the accident from the list below. Enter the name and place the corresponding code number identified in the box. If equipment is not included below, use code 24, "OTHER", and write in specific type of equipment.

CONSTRUCTION EQUIPMENT

1. GRADER
2. DRAGLINE
3. CRANE (ON VESSEL/BARGE)
4. CRANE (TRACKED)
5. CRANE (RUBBER TIRE)
6. CRANE (VEHICLE MOUNTED)
7. CRANE (TOWER)
8. SHOVEL
9. SCRAPER
10. PUMP TRUCK (CONCRETE)
11. TRUCK (CONCRETE/TRANSIT MIXER)
12. DUMP TRUCK (HIGHWAY)
13. DUMP TRUCK (OFF HIGHWAY)
14. TRUCK (OTHER)
15. FORKLIFT
16. BACKHOE
17. FRONT-END LOADER
18. PILE DRIVER
19. TRACTOR (UTILITY)
20. MANLIFT
21. DOZER
22. DRILL RIG
23. COMPACTOR/VIBRATORY ROLLER
24. OTHER

INSTRUCTIONS FOR SECTION 5—INJURY/ILLNESS INFORMATION

a. SEVERITY OF INJURY / ILLNESS - Reference para 2-10 of USACE Suppl 1 to AR 385-40 and enter code and description from list below.

NOI NO INJURY
FAT FATALITY
PTL PERMANENT TOTAL DISABILITY
PPR PERMANENT PARTIAL DISABILITY
LWD LOST WORKDAY CASE INVOLVING DAYS AWAY FROM WORK
NLW RECORDABLE CASE WITHOUT LOST WORKDAYS
RFA RECORDABLE FIRST AID CASE
NRI NON-RECORDABLE INJURY

b. ESTIMATED DAYS LOST—Enter the estimated number of workdays the person will lose from work.

c. ESTIMATED DAYS HOSPITALIZED—Enter the estimated number of workdays the person will be hospitalized.

d. ESTIMATED DAYS RESTRICTED DUTY—Enter the estimated number of workdays the person, as a result of the accident, will not be able to perform all of their regular duties.

e. BODY PART AFFECTED—Select the most appropriate primary and when applicable, secondary body part affected from the list below. Enter body part name on line and place the corresponding code letters identifying that body part in the box.

GENERAL BODY AREA	CODE	BODY PART NAME
ARM/WRIST	AB	ARM AND WRIST
	AS	ARM OR WRIST
TRUNK, EXTERNAL MUSCULATURE	B1	SINGLE BREAST
	B2	BOTH BREASTS
	B3	SINGLE TESTICLE
	B4	BOTH TESTICLES
	BA	ABDOMEN
	BC	CHEST
	BL	LOWER BACK
	BP	PENIS
	BS	SIDE
	BU	UPPER BACK
	BW	WAIST
	BZ	TRUNK OTHER
HEAD, INTERNAL	C1	SINGLE EAR INTERNAL
	C2	BOTH EARS INTERNAL
	C3	SINGLE EYE INTERNAL
	C4	BOTH EYES INTERNAL
	CB	BRAIN
	CC	CRANIAL BONES
	CD	TEETH
	CJ	JAW
	CL	THROAT, LARYNX
	CM	MOUTH
	CN	NOSE
	CR	THROAT, OTHER
	CT	TONGUE
	CZ	HEAD OTHER INTERNAL
ELBOW	EB	BOTH ELBOWS
	ES	SINGLE ELBOW
FINGER	F1	FIRST FINGER
	F2	BOTH FIRST FINGERS
	F3	SECOND FINGER
	F4	BOTH SECOND FINGERS
	F5	THIRD FINGER
	F6	BOTH THIRD FINGERS
	F7	FOURTH FINGER
	F8	BOTH FOURTH FINGERS
TOE	G1	GREAT TOE
	G2	BOTH GREAT TOES
	G3	TOE OTHER
	G4	TOES OTHER
HEAD, EXTERNAL	H1	EYE EXTERNAL
	H2	BOTH EYES EXTERNAL
	H3	EAR EXTERNAL
	H4	BOTH EARS EXTERNAL
	HC	CHIN
	HF	FACE
	HK	NECK/THROAT
	HM	MOUTH/LIPS
	HN	NOSE
	HS	SCALP
KNEE	KB	BOTH KNEES
	KS	KNEE
LEG, HIP, ANKLE, BUTTOCK	LB	BOTH LEGS/HIPS/ ANKLES/BUTTOCKS
	LS	SINGLE LEG/HIP ANKLE/BUTTOCK
HAND	MB	BOTH HANDS
	MS	SINGLE HAND
FOOT	PB	BOTH FEET
	PS	SINGLE FOOT
TRUNK, BONES	R1	SINGLE COLLAR BONE
	R2	BOTH COLLAR BONES
	R3	SHOULDER BLADE
	R4	BOTH SHOULDER BLADES
	RB	RIB
	RS	STERNUM (BREAST BONE)
	RV	VERTEBRAE (SPINE; DISC)
	RZ	TRUNK BONES OTHER
SHOULDER	SB	BOTH SHOULDERS
	SS	SINGLE SHOULDER
THUMB	TB	BOTH THUMBS
	TS	SINGLE THUMB
TRUNK, INTERNAL ORGANS	V1	LUNG, SINGLE
	V2	LUNGS, BOTH
	V3	KIDNEY, SINGLE
	V4	KIDNEYS, BOTH
	VH	HEART
	VL	LIVER
	VR	REPRODUCTIVE ORGANS
	VS	STOMACH
	VV	INTESTINES
	VZ	TRUNK, INTERNAL; OTHER

f. NATURE OF INJURY/ILLNESS - Select the most appropriate nature of injury / illness from the list below. This nature of injury / illness shall correspond to the primary body part selected in 5e, above. Enter the nature of injury / illness name on the line and place the corresponding CODE letters in the box provided.

* The injury or condition selected below must be caused by a specific incident or event which occurred during a single work day or shift.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
*TRAUMATIC INJURY OR DISABILITY	TA	AMPUTATION
	TB	BACK STRAIN.
	TC	CONTUSION; BRUISE; ABRASION
	TD	DISLOCATION
	TF	FRACTURE
	TH	HERNIA
	TK	CONCUSSION
	TL	LACERATION, CUT
	TP	PUNCTURE
	TS	STRAIN, MULTIPLE
	TU	BURN, SCALD, SUNBURN
	TI	TRAUMATIC SKIN DISEASES/ CONDITIONS INCLUDING DERMATITIS
	TR	TRAUMATIC RESPIRATORY DISEASE
	TQ	TRAUMATIC FOOD POISONING
	TW	TRAUMATIC TUBERCULOSIS
	TX	TRAUMATIC VIROLOGICAL/ INFECTIVE/PARASITIC DISEASE
	T1	TRAUMATIC CEREBRAL VASCULAR CONDITION/STROKE
	T2	TRAUMATIC HEARING LOSS
	T3	TRAUMATIC HEART CONDITION
	T4	TRAUMATIC MENTAL DISORDER; STRESS; NERVOUS CONDITION
	T8	TRAUMATIC INJURY – OTHER (EXCEPT DISEASE, ILLNESS)

**A nontraumatic physiological harm or loss of capacity produced by systemic infection; continued or repeated stress or strain; exposure to toxins, poisons, fumes, etc.; or other continued and repeated exposures to conditions of the work environment over a long period of time. For practical purposes, an occupational illness/disease or disability is any reported condition which doses not meet the definition of traumatic injury or disability as described above.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
**NON-TRAUMATIC ILLNESS/DISEASE OR DISABILITY		
RESPIRATORY DISEASE	RA	ASBESTOSIS
	RB	BRONCHITIS
	RE	EMPHYSEMA
	RP	PNEUMOCONIOSIS
	RS	SILICOSIS
	R9	RESPIRATORY DISEASE, OTHER
VIROLOGICAL, INFECTIVE & PARASITIC DISEASES	VB	BRUCELLOSIS
	VC	COCCIDIOMYCOSIS
	VF	FOOD POISONING
	VH	HEPATITIS
	VM	MALARIA
	VS	STAPHYLOCOCCUS
	VT	TUBERCULOSIS
	V9	VIROLOGICAL/INFECTIVE/ PARASITIC – OTHER
DISABILITY, OCCUPATIONAL	DA	ARTHRITIS, BURSITIS
	DB	BACK STRAIN, BACK SPRAIN
	DC	CEREBRAL VASCULAR CONDITION; STROKE
	DD	ENDEMIC DISEASE (OTHER THAN CODE TYPES R&S)
	DE	EFFECT OF ENVIRONMENTAL CONDITION
	DH	HEARING LOSS
	DK	HEART CONDITION
	DM	MENTAL DISORDER, EMOTIONAL STRESS NERVOUS CONDITION
	DR	RADIATION
	DS	STRAIN, MULTIPLE
	DU	ULCER
	DV	OTHER VASCULAR CONDITIONS
	D9	DISABILITY, OTHER
SKIN DISEASE OR CONDITION	SB	BIOLOGICAL
	SC	CHEMICAL
	S9	DERMATITIS, UNCLASSIFIED

g. TYPE AND SOURCE OF INJURY/ILLNESS (CAUSE) - Type and Source Codes are used to describe what caused the incident. The Type Code stands for an ACTION and the Source Code for an OBJECT or SUBSTANCE. Together, they form a brief description of how the incident occurred. Where there are two different sources, code the initiating source of the incident (see example 1, below). Examples:

(1) An employee tripped on carpet and struck his head on a desk.
TYPE: 210 (fell on same level) SOURCE: 0110 (walking/working surface)

NOTE: This example would NOT be coded 120 (struck against) and 0140 (furniture).

(2) A Park Ranger contracted dermatitis from contact with poison ivy/ oak.
TYPE: 510 (contact) SOURCE: 0920 (plant)

(3) A lock and dam mechanic punctured his finger with a metal sliver while grinding a turbine blade.
TYPE: 410 (punctured by) SOURCE: 0830 (metal)

(4) An employee was driving a government vehicle when it was struck by another vehicle..
TYPE: 800 (traveling in) SOURCE: 0421 (government-owned vehicle, as driver)

NOTE: The Type Code 800, "Traveling In" is different from the other type codes in that its function is not to identify factors contributing to the injury or fatality, but rather to collect data on the type of vehicle the employee was operating or traveling in at the time of the incident.

Select the most appropriate TYPE and SOURCE identifier from the list below and enter the name on the line and the corresponding code in the appropriate box.

CODE	TYPE OF INJURY NAME
	STRUCK
0110	STRUCK BY
0111	STRUCK BY FALLING OBJECT
0120	STRUCK AGAINST
	FELL, SLIPPED, TRIPPED
0210	FELL ON SAME LEVEL
0220	FELL ON DIFFERENT LEVEL
0230	SLIPPED, TRIPPED (NO FALL)
	CAUGHT
0310	CAUGHT ON
0320	CAUGHT IN
0330	CAUGHT BETWEEN
	PUNCTURED, LACERATED
0410	PUNCTURED BY
0420	CUT BY
0430	STUNG BY
0440	BITTEN BY
	CONTACTED
0510	CONTACTED WITH (INJURED PERSON MOVING)
0520	CONTACTED BY (OBJECT WAS MOVING)
	EXERTED
0610	LIFTED, STRAINED BY (SINGLE ACTION)
0620	STRESSED BY (REPEATED ACTION)
	EXPOSED
0710	INHALED
0720	INGESTED
0730	ABSORBED
0740	EXPOSED TO
0800	TRAVELING IN

CODE	SOURCE OF INJURY NAME
0100	BUILDING OR WORKING AREA
0110	WALKING/WORKING SURFACE (FLOOR, STREET, SIDEWALKS, ETC)
0120	STAIRS, STEPS
0130	LADDER
0140	FURNITURE, FURNISHINGS, OFFICE EQUIPMENT
0150	BOILER, PRESSURE VESSEL
0160	EQUIPMENT LAYOUT (ERGONOMIC)
0170	WINDOWS, DOORS
0180	ELECTRICITY

CODE	SOURCE OF INJURY NAME
0200	ENVIRONMENTAL CONDITION
0210	TEMPERATURE EXTREME (INDOOR)
0220	WEATHER (ICE, RAIN, HEAT, ETC.)
0230	FIRE, FLAME, SMOKE (NOT TOBACCO)
0240	NOISE
0250	RADIATION
0260	LIGHT
0270	VENTILATION
0271	TOBACCO SMOKE
0280	STRESS (EMOTIONAL)
0290	CONFINED SPACE
0300	MACHINE OR TOOL
0310	HAND TOOL (POWERED: SAW, GRINDER, ETC.)
0320	HAND TOOL (NONPOWERED)
0330	MECHANICAL POWER TRANSMISSION APPARATUS
0340	GUARD, SHIELD (FIXED, MOVEABLE, INTERLOCK)
0350	VIDEO DISPLAY TERMINAL
0360	PUMP, COMPRESSOR, AIR PRESSURE TOOL
0370	HEATING EQUIPMENT
0380	WELDING EQUIPMENT
0400	VEHICLE
0411	AS DRIVER OF PRIVATELY OWNED/RENTAL VEHICLE
0412	AS PASSENGER OF PRIVATELY OWNED/RENTAL VEHICLE
0421	DRIVER OF GOVERNMENT VEHICLE
0422	PASSENGER OF GOVERNMENT VEHICLE
0430	COMMON CARRIER (AIRLINE, BUS, ETC.)
0440	AIRCRAFT (NOT COMMERCIAL)
0450	BOAT, SHIP, BARGE
0500	MATERIAL HANDLING EQUIPMENT
0510	EARTHMOVER (TRACTOR, BACKHOE, ETC.)
0520	CONVEYOR (FOR MATERIAL AND EQUIPMENT)
0530	ELEVATOR, ESCALATOR, PERSONNEL HOIST
0540	HOIST, SLING CHAIN, JACK
0550	CRANE
0551	FORKLIFT
0560	HANDTRUCK, DOLLY
0600	DUST, VAPOR, ETC.
0610	DUST (SILICA, COAL, ETC.)
0620	FIBERS
0621	ASBESTOS
0630	GASES
0631	CARBON MONOXIDE
0640	MIST, STEAM, VAPOR, FUME
0641	WELDING FUMES
0650	PARTICLES (UNIDENTIFIED)
0700	CHEMICAL, PLASTIC, ETC.
0711	DRY CHEMICAL—CORROSIVE
0712	DRY CHEMICAL—TOXIC
0713	DRY CHEMICAL—EXPLOSIVE
0714	DRY CHEMICAL—FLAMMABLE
0721	LIQUID CHEMICAL—CORROSIVE
0722	LIQUID CHEMICAL—TOXIC
0723	LIQUID CHEMICAL—EXPLOSIVE
0724	LIQUID CHEMICAL—FLAMMABLE
0730	PLASTIC
0740	WATER
0750	MEDICINE
0800	INANIMATE OBJECT
0810	BOX, BARREL, ETC.
0820	PAPER
0830	METAL ITEM, MINERAL
0831	NEEDLE
0840	GLASS
0850	SCRAP, TRASH
0860	WOOD
0870	FOOD
0880	CLOTHING, APPAREL, SHOES
0900	ANIMATE OBJECT
0911	DOG
0912	OTHER ANIMAL
0920	PLANT
0930	INSECT
0940	HUMAN (VIOLENCE)
0950	HUMAN (COMMUNICABLE DISEASE)
0960	BACTERIA, VIRUS (NOT HUMAN CONTACT)

CODE	SOURCE OF INJURY NAME
1000	PERSONAL PROTECTIVE EQUIPMENT
1010	PROTECTIVE CLOTHING, SHOES, GLASSES, GOGGLES
1020	RESPIRATOR, MASK
1021	DIVING EQUIPMENT
1030	SAFETY BELT, HARNESS
1040	PARACHUTE

INSTRUCTIONS FOR SECTION 6 — PUBLIC FATALITY

a. ACTIVITY AT TIME OF ACCIDENT—Select the activity being performed at the time of the accident from the list below. Enter the activity name on the line and the corresponding number in the box. If the activity performed is not identified on the list, select from the *most* appropriate primary activity area (water related, non-water related or other activity), the code number for "Other", and write in the activity being performed at the time of the accident.

WATER RELATED RECREATION

1. Sailing
2. Boating—powered
3. Boating—unpowered
4. Water skiing
5. Fishing from boat
6. Fishing from bank dock or pier
7. Fishing while wading
8. Swimming/supervised area
9. Swimming/designated area
10. Swimming/other area
11. Underwater activities (skin diving, scuba, etc.)
12. Wading
13. Attempted rescue
14. Hunting from boat
15. Other

NON-WATER RELATED RECREATION

16. Hiking and walking
17. Climbing (general)
18. Camping/picnicking authorized area
19. Camping/picnicking unauthorized area
20. Guided tours
21. Hunting
22. Playground equipment
23. Sports/summer (baseball, football, etc.)
24. Sports/winter (skiing, sledding, snowmobiling etc.)
25. Cycling (bicycle, motorcycle, scooter)
26. Gliding
27. Parachuting
28. Other non-water related

OTHER ACTIVITIES

29. Unlawful acts (fights, riots, vandalism, etc.)
30. Food preparation/serving
31. Food consumption
32. Housekeeping
33. Sleeping
34. Pedestrian struck by vehicle
35. Pedestrian other acts
36. Suicide
37. "Other" activities

b. PERSONAL FLOTATION DEVICE USED—If fatality was water-related was the victim wearing a person flotation device? Mark the appropriate box.

INSTRUCTIONS FOR SECTION 7—MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE—Mark appropriate box for each vehicle involved. If more than one vehicle of the same type is involved, mark both halves of the appropriate box. USACE vehicle(s) involved shall be marked in left half of appropriate box.

b. TYPE OF COLLISION—Mark appropriate box.

c. SEAT BELT—Mark appropriate box.

INSTRUCTIONS FOR SECTION 8—PROPERTY/ MATERIAL INVOLVED

a. NAME OF ITEM—Describe all property involved in accident. Property/material involved means material which is damaged or whose use or misuse contributed to the accident. Include the name, type, model; also include the National Stock Number (NSN) whenever applicable.

b. OWNERSHIP—Enter ownership for each item listed. (Enter one of the following: *USACE; OTHER GOVERNMENT; CONTRACTOR: PRIVATE)*

c. $ AMOUNT OF DAMAGE—Enter the total estimated dollar amount of damage (parts and labor), if any.

INSTRUCTIONS FOR SECTION 9—VESSEL/ FLOATING PLANT ACCIDENT

a. TYPE OF VESSEL/FLOATING PLANT—Select the most appropriate vessel/floating plant from list below. Enter name and place corresponding number in box. If item is not listed below, enter item number for "OTHER" and write in specific type of vessel/ floating plant.

VESSEL/FLOATING PLANTS

1. ROW BOAT
2. SAIL BOAT
3. MOTOR BOAT
4. BARGE
5. DREDGE/HOPPER
6. DREDGE/SIDE CASTING
7. DREDGE/DIPPER
8. DREDGE/CLAMSHELL, BUCKET
9. DREDGE/PIPE LINE
10. DREDGE/DUST PAN
11. TUG BOAT
12. OTHER

b. COLLISION/MISHAP—Select from the list below the object(s) that contributed to the accident or were damaged in the accident.

COLLISION/MISHAP

1. COLLISION W/OTHER VESSEL
2. UPPER GUIDE WALL
3. UPPER LOCK GATES
4. LOCK WALL
5. LOWER LOCK GATES
6. LOWER GUIDE WALL
7. HAULAGE UNIT
8. BREAKING TOW
9. TOW BREAKING UP
10. SWEPT DOWN ON DAM
11. BUOY/DOLPHIN/CELL
12. WHARF OR DOCK
13. OTHER

INSTRUCTIONS FOR SECTION 10—ACCIDENT DESCRIPTION

DESCRIBE ACCIDENT—Fully describe the accident. Give the sequence of events that describe what happened leading up to and including the accident. Fully identify personnel and equipment involved and their role(s) in the accident. Ensure that relationships between personnel and equipment are clearly specified. Continue on blank sheets if necessary and attach to this report.

INSTRUCTIONS FOR SECTION 11—CAUSAL FACTORS

a. Review thoroughly. Answer each question by marking the appropriate block. If any answer is yes, explain in item 13 below. Consider, as a minimum, the following:

(1) DESIGN—Did inadequacies associated with the building or work site play a role? Would an improved design or layout of the equipment or facilities reduce the likelihood of similar accidents? Were the tools or other equipment designed and intended for the task at hand?

(2) INSPECTION/MAINTENANCE—Did inadequately or improperly maintained equipment, tools, workplace, etc. create or worsen any hazards that contributed to the accident? Would better equipment, facility, work site or work activity inspections have helped avoid the accident?

(3) PERSON'S PHYSICAL CONDITION—Do you feel that the accident would probably not have occurred if the employee was in "good" physical condition? If the person involved in the accident had been in better physical condition, would the accident have been less severe or avoided altogether? Was over exertion a factor?

(4) OPERATING PROCEDURES—Did a lack of or inadequacy within established operating procedures contribute to the accident? Did any aspect of the procedures introduce any hazard to, or increase the risk associated with the work process? Would establishment or improvement of operating procedures reduce the likelihood of similar accidents?

(5) JOB PRACTICES—Were any of the provisions of the Safety and Health Requirements Manual (EM 385-1-1) violated? Was the task being accomplished in a manner which was not in compliance with an established job hazard analysis or activity hazard analysis? Did any established job practice (including EM 385-1-1) fail to adequately address the task or work process? Would better job practices improve the safety of the task?

(6) HUMAN FACTORS—Was the person under undue stress (either internal or external to the job)? Did the task tend toward overloading the capabilities of the person; i.e., did the job require tracking and reacting to many external inputs such as displays, alarms, or signals? Did the arrangement of the workplace tend to interfere with efficient task performance? Did the task require reach, strength, endurance, agility, etc., at or beyond the capabilities of the employee? Was the work environment ill-adapted to the person? Did the person need more training, experience, or practice in doing the task? Was the person inadequately rested to perform safely?

(7) ENVIRONMENTAL FACTORS—Did any factors such as moisture, humidity, rain, snow, sleet, hail, ice, fog, cold, heat, sun, temperature changes, wind, tides, floods, currents, dust, mud, glare, pressure changes, lightning, etc., play a part in the accident?

(8) CHEMICAL AND PHYSICAL AGENT FACTORS—Did exposure to chemical agents (either single shift exposure or long-term exposure) such as dusts, fibers (asbestos, etc.), silica, gases (carbon monoxide, chlorine, etc.,), mists, steam, vapors, fumes, smoke, other particulates, liquid or dry chemicals that are corrosive, toxic, explosive or flammable, by-products of combustion or physical agents such as noise, ionizing radiation, non-ionizing radiation (UV radiation created during welding, etc.) contribute to the accident/incident?

(9) OFFICE FACTORS—Did the fact that the accident occurred in an office setting or to an office worker have a bearing on its cause? For example, office workers tend to have less experience and training in performing tasks such as lifting office furniture. Did physical hazards within the office environment contribute to the hazard?

(10) SUPPORT FACTORS—Was the person using an improper tool for the job? Was inadequate time available or utilized to safely accomplish the task? Were less than adequate personnel resources (in terms of employee skills, number of workers, and adequate supervision) available to get the job done properly? Was funding available, utilized, and adequate to provide proper tools, equipment, personnel, site preparation. etc?

(11) PERSONAL PROTECTIVE EQUIPMENT—Did the person fail to use appropriate personal protective equipment (gloves, eye protection, hard-toed shoes, respirator, etc.) for the task or environment? Did protective equipment provided or worn fail to provide adequate protection from the hazard(s)? Did lack of or inadequate maintenance of protective gear contribute to the accident?

(12) DRUGS/ALCOHOL—Is there any reason to believe the person's mental or physical capabilities, judgement, etc., were impaired or altered by the use of drugs or alcohol? Consider the effects of prescription medicine and over the counter medications as well as illicit drug use. Consider the effect of drug or alcohol induced "hangovers".

b. WRITTEN JOB/ACTIVITY HAZARD ANALYSIS—Was a written Job/Activity Hazard Analysis completed for the task being performed at the time of the accident? Mark the appropriate box. *If one was performed, attach a copy of the analysis to the report.*

INSTRUCTIONS FOR SECTION 12—TRAINING

a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK?—For the purpose of this section "trained" means the person has been provided the necessary information (either formal and/or on-the-job (OJT) training) to competently perform the activity/task in a safe and healthful manner.

b. TYPE OF TRAINING—Mark the appropriate box that best indicates the type of training; (classroom or on-the-job) that the injured person received before the accident happened.

c. DATE OF MOST RECENT TRAINING—Enter the month, day, and year of the last *formal* training completed that covered the activity-task being performed at the time of the accident.

INSTRUCTIONS FOR SECTION 13—CAUSES

a. DIRECT CAUSES—The direct cause is that single factor which most directly lead to the accident. See examples below.

b. INDIRECT CAUSES—Indirect causes are those factors which contributed to but did not directly initiate the occurrence of the accident.

Examples for section 13:

a. Employee was dismantling scaffold and fell 12 feet from unguarded opening.
Direct cause: failure to provide fall protection at elevation.
Indirect causes: failure to enforce USACE safety requirements; improper training/motivation of employee (possibility that employee was not knowledgeable of USACE fall protection requirements or was lax in his attitude towards safety); failure to ensure provision of positive fall protection whenever elevated; failure to address fall protection during scaffold dismantling in phase hazard analysis.

b. Private citizen had stopped his vehicle at intersection for red light when vehicle was struck in rear by USACE vehicle. (note USACE vehicle was in proper/safe working condition).
Direct cause: failure of USACE driver to maintain control of and stop USACE vehicle within safe distance.
Indirect cause: Failure of employee to pay attention to driving (defensive driving).

INSTRUCTIONS FOR SECTION 14—ACTION TO ELIMINATE CAUSE(S)

DESCRIPTION—Fully describe all the actions taken, anticipated, and recommended to eliminate the cause(s) and prevent reoccurrence of similar accidents/illnesses. Continue on blank sheets of paper if necessary to fully explain and attach to the completed report form.

INSTRUCTIONS FOR SECTION 15—DATES FOR ACTION

a. BEGIN DATE—Enter the date when the corrective action(s) identified in Section 14 will begin.

b. COMPLETE DATE—Enter the date when the corrective action(s) identified in Section 14 will be completed.

c. TITLE AND SIGNATURE—Enter the title and signature of supervisor completing the accident report. For a GOVERNMENT employee accident/illness the immediate supervisor will complete and sign the report. For PUBLIC accidents the USACE Project Manager/Area Engineer responsible for the USACE property where the accident happened shall complete and sign the report. For CONTRACTOR accidents the Contractor's project manager shall complete and sign the report and provide to the USACE supervisor responsible for oversight of that contractor activity. This USACE Supervisor shall also sign the report. Upon entering the information required in 15.d, 15.e and 15.f below, the responsible USACE supervisor shall forward the report for management review as indicated in Section 16.

d. DATE SIGNED—Enter the month, day, and year that the report was signed by the responsible supervisor.

e. ORGANIZATION NAME—For GOVERNMENT employee accidents enter the USACE organization name (Division, Branch, Section, etc.) of the injured employee. For PUBLIC accidents enter the USACE organization name for the person identified in block 15.c. For CONTRACTOR accidents enter the USACE organization name for the USACE office responsible for providing contract administration oversight.

f. OFFICE SYMBOL—Enter the latest complete USACE Office Symbol for the USACE organization identified in block 15.e.

INSTRUCTIONS FOR SECTION 16—MANAGEMENT REVIEW (1st)

1ST REVIEW—Each USACE FOA shall determine who will provide 1st management review. The responsible USACE supervisor in section 15.c shall forward the completed report to the USACE office designated as the 1st Reviewer by the FOA. Upon receipt, the Chief of the Office shall review the completed report, mark the appropriate box, provide substantive comments, sign, date, and forward to the FOA Staff Chief (2nd review) for review and comment.

INSTRUCTIONS FOR SECTION 17—MANAGEMENT REVIEW (2nd)

2ND REVIEW—The FOA Staff Chief (i.e., FOA Chief of Construction, Operations, Engineering, Planning, etc.) shall mark the appropriate box, review the completed report, provide substantive comments, sign, date, and return to the FOA Safety and Occupational Health Office.

INSTRUCTIONS FOR SECTION 18—SAFETY AND OCCUPATIONAL HEALTH REVIEW

3RD REVIEW—The FOA Safety and Occupational Health Office shall review the completed report, mark the appropriate box, ensure that any inadequacies, discrepancies, etc, are rectified by the responsible supervisor and management reviewers, provide substantive comments, sign, date and forward to the FOA Commander for review, comment, and signature.

INSTRUCTION FOR SECTION 19—COMMAND APPROVAL

4TH REVIEW—The FOA Commander shall (to include the person designated Acting Commander in his absence) review the completed report, comment if required, sign, date, and forward the report to the FOA Safety and Occupational Health Office. Signature authority shall not be delegated.

ATTACHMENT III

STANDARD OPERATING PROCEDURE FOR UTILITY LOCATING AND EXCAVATION CLEARANCE

TETRA TECH NUS, INC.	STANDARD OPERATING PROCEDURES	Number HS-1.0	Page 1 of 15
		Effective Date 12/03	Revision 2
		Applicability Tetra Tech NUS, Inc.	
		Prepared Health & Safety	
Subject UTILITY LOCATING AND EXCAVATION CLEARANCE		Approved D. Senovich	

TABLE OF CONTENTS

1.0 PURPOSE

Utilities such as electric service lines, natural or propane gas lines, water and sewage lines, telecommunications, and steam lines are very often in the immediate vicinity of work locations. Contact with underground or overhead utilities can have serious consequences including employee injury/fatality, property and equipment damage, substantial financial impacts, and loss of utility service to users.

The purpose of this procedure is to provide minimum requirements and technical guidelines regarding the appropriate procedures to be followed when performing subsurface and overhead utility locating services. It is the policy of Tetra Tech NUS, Inc. (TtNUS) to provide a safe and healthful work environment for the protection of our employees. The purpose of this Standard Operating Procedure (SOP) is to aid in achieving the objectives of this policy, to present the acceptable procedures pertaining to utility locating and excavation clearance activities, and to present requirements and restrictions relevant to these types of activities. This SOP must be reviewed by any employee potentially involved with underground or overhead utility locating and avoidance activities.

2.0 SCOPE

This procedure applies to all TtNUS field activities where there may be potential contact with underground or overhead utilities. This procedure provides a description of the principles of operation, instrumentation, applicability, and implementability of typical methods used to determine the presence and avoidance of contact with utility services. This procedure is intended to assist with work planning and scheduling, resource planning, field implementation, and subcontractor procurement. Utility locating and excavation clearance requires site-specific information prior to the initiation of any such activities on a specific project. This SOP is not intended to provide a detailed description of methodology and instrument operation. Specialized expertise during both planning and execution of several of the methods presented may also be required.

3.0 GLOSSARY

Electromagnetic Induction (EMI) Survey - A geophysical exploration method whereby electromagnetic fields are induced in the ground and the resultant secondary electromagnetic fields are detected as a measure of ground conductivity.

Magnetometer – A device used for precise and sensitive measurements of magnetic fields.

Magnetic Survey – A geophysical survey method that depends on detection of magnetic anomalies caused by the presence of buried ferromagnetic objects.

Metal Detection – A geophysical survey method that is based on electromagnetic coupling caused by underground conductive objects.

Vertical Gradiometer – A magnetometer equipped with two sensors that are vertically separated by a fixed distance. It is best suited to map near surface features and is less susceptible to deep geologic features.

Ground Penetrating Radar – Ground Penetrating Radar (GPR) involves specialized radar equipment whereby a signal is sent into the ground via a transmitter. Some portion of the signal will be reflected from the subsurface material, which is then recorded with a receiver and electronically converted into a graphic picture.

4.0 RESPONSIBILITIES

Project Manager (PM)/Task Order Manager (TOM) - Responsible for ensuring that all field activities are conducted in accordance with this procedure.

Site Manager (SM)/Field Operations Leader (FOL) - Responsible for the onsite verification that all field activities are performed in compliance with approved SOPs or as otherwise directed by the approved project plan(s).

Site Health & Safety Officer (SHSO) – Responsible to provide technical assistance and verify full compliance with this SOP. The SHSO is also responsible for reporting any deficiencies to the Corporate Health and Safety Manager (HSM) and to the PM/TOM.

Health & Safety Manager (HSM) – Responsible for preparing, implementing, and modifying corporate health and safety policy and this SOP.

Site Personnel – Responsible for performing their work activities in accordance with this SOP and the TtNUS Health and Safety Policy.

5.0 PROCEDURES

This procedure addresses the requirements and technical procedures that must be performed to minimize the potential for contact with underground and overhead utility services. These procedures are addressed individually from a buried and overhead standpoint.

5.1 Buried Utilities

Buried utilities present a heightened concern because their location is not typically obvious by visual observation, and it is common that their presence and/or location is unknown or incorrectly known on client properties. This procedure must be followed prior to beginning any subsurface probing or excavation that might potentially be in the vicinity of underground utility services. In addition, the Utility Clearance Form (Attachment 3) must be completed for every location or cluster of locations where intrusive activities will occur.

Where the positive identification and de-energizing of underground utilities cannot be obtained and confirmed using the following steps, the PM/TOM is responsible for arranging for the procurement of a qualified, experienced, utility locating subcontractor who will accomplish the utility location and demarcation duties specified herein.

1. A comprehensive review must be made of any available property maps, blue lines, or as-builts prior to site activities. Interviews with local personnel familiar with the area should be performed to provide additional information concerning the location of potential underground utilities. Information regarding utility locations shall be added to project maps upon completion of this exercise.

2., A visual site inspection must be performed to compare the site plan information to actual field conditions. Any findings must be documented and the site plan/maps revised. The area(s) of proposed excavation or other subsurface activities must be marked at the site in white paint or pin flags to identify those locations of the proposed intrusive activities. The site inspection should focus on locating surface indications of potential underground utilities. Items of interest include the presence of nearby area lights, telephone service, drainage grates, fire hydrants, electrical service vaults/panels, asphalt/concrete scares and patches, and topographical depressions. Note the location of any emergency shut off switches. Any additional information regarding utility

locations shall be added to project maps upon completion of this exercise and returned to the PM/TOM.

3. If the planned work is to be conducted on private property (e.g., military installations, manufacturing facilities, etc.) the FOL must identify and contact appropriate facility personnel (e.g., public works or facility engineering) before any intrusive work begins to inquire about (and comply with) property owner requirements. It is important to note that private property owners may require several days to several weeks advance notice prior to locating utilities.

4. If the work location is on public property, the state agency that performs utility clearances must be notified (see Attachment 1). State "one-call" services must be notified prior to commencing fieldwork per their requirements. Most one-call services require, by law, 48- to 72-hour advance notice prior to beginning any excavation. Such services typically assign a "ticket" number to the particular site. This ticket number must be recorded for future reference and is valid for a specific period of time, but may be extended by contacting the service again. The utility service will notify utility representatives who then mark their respective lines within the specified time frame. It should be noted that most military installations own their own utilities but may lease service and maintenance from area providers. Given this situation, "one call" systems may still be required to provide location services on military installations.

5. Utilities must be identified and their locations plainly marked using pin flags, spray paint, or other accepted means. The location of all utilities must be noted on a field sketch for future inclusion on project maps. Utility locations are to be identified using the following industry-standard color code scheme, unless the property owner or utility locator service uses a different color code:

white	excavation/subsurface investigation location
red	electrical
yellow	gas, oil, steam
orange	telephone, communications
blue	water, irrigation, slurry
green	sewer, drain

6. Where utility locations are not confirmed with a high degree of confidence through drawings, schematics, location services, etc., the work area must be thoroughly investigated prior to beginning the excavation. In these situations, utilities must be identified using safe and effective methods such as passive and intrusive surveys, or the use of non-conductive hand tools. Also, in situations where such hand tools are used, they should always be used in conjunction with suitable detection equipment, such as the items described in Section 6.0 of this SOP. Each method has advantages and disadvantages including complexity, applicability, and price. It also should be noted that in some states, initial excavation is required by hand to a specified depth.

7. At each location where trenching or excavating will occur using a backhoe or other heavy equipment, and where utility identifications and locations cannot be confirmed prior to groundbreaking, the soil must be probed using a device such as a tile probe which is made of non-conductive material such as fiberglass. If these efforts are not successful in clearing the excavation area of suspect utilities, hand shoveling must be performed for the perimeter of the intended excavation.

8. All utilities uncovered or undermined during excavation must be structurally supported to prevent potential damage. Unless necessary as an emergency corrective measure, TtNUS shall not make any repairs or modifications to existing utility lines without prior permission of the utility owner, property owner, and Corporate HSM. All repairs require that the line be locked-out/tagged-out prior to work.

5.2 Overhead Power Lines

If it is necessary to work within the minimum clearance distance of an overhead power line, the overhead line must be de-energized and grounded, or re-routed by the utility company or a registered electrician. If protective measures such as guarding, isolating, or insulating are provided, these precautions must be adequate to prevent employees from contacting such lines directly with any part of their body or indirectly though conductive materials, tools, or equipment.

The following table provides the required minimum clearances for working in proximity to overhead power lines.

Nominal Voltage	Minimum Clearance
0 -50 kV	10 feet, or one mast length; whichever is greater
50+ kV	10 feet plus 4 inches for every 10 kV over 50 kV or 1.5 mast lengths; whichever is greater

6.0 UNDERGROUND LOCATING TECHNIQUES

A variety of supplemental utility locating approaches are available and can be applied when additional assurance is needed. The selection of the appropriate method(s) to employ is site-specific and should be tailored to the anticipated conditions, site and project constraints, and personnel capabilities.

6.1 Geophysical Methods

Geophysical methods include electromagnetic induction, magnetics, and ground penetrating radar. Additional details concerning the design and implementation of electromagnetic induction, magnetics, and ground penetrating radar surveys can be found in one or more of the TtNUS SOPs included in the References (Section 8.0).

Electromagnetic Induction

Electromagnetic Induction (EMI) line locators operate either by locating a background signal or by locating a signal introduced into the utility line using a transmitter. A utility line acts like a radio antenna, producing electrons, which can be picked up with a radiofrequency receiver. Electrical current carrying conductors have a 60HZ signal associated with them. This signal occurs in all power lines regardless of voltage. Utilities in close proximity to power lines or used as grounds may also have a 60HZ signal, which can be picked up with an EM receiver. A typical example of this type of geophysical equipment is an EM-61.

EMI locators specifically designed for utility locating use a special signal that is either indirectly induced onto a utility line by placing the transmitter above the line or directly induced using an induction clamp. The clamp induces a signal on the specific utility and is the preferred method of tracing since there is little chance of the resulting signals being interfered with. A good example of this type of equipment is the Schonstedt® MAC-51B locator. The MAC-51B performs inductively traced surveys, simple magnetic locating, and traced nonmetallic surveys.

When access can be gained inside a conduit to be traced, a flexible insulated trace wire can be used. This is very useful for non-metallic conduits but is limited by the availability of gaining access inside the pipe.

Magnetics

Magnetic locators operate by detecting the relative amounts of buried ferrous metal. They are incapable of locating or identifying nonferrous utility lines but can be very useful for locating underground storage tanks (UST's), steel utility lines, and buried electrical lines. A typical example of this type of equipment is the Schonstedt® GA-52Cx locator. The GA-52Cx is capable of locating 4-inch steel pipe up to 8 feet deep.

Non-ferrous lines are often located by using a typical plumbing tool (snake) fed through the line. A signal is then introduced to the snake that is then traced.

Ground Penetrating Radar

Ground Penetrating Radar (GPR) involves specialized radar equipment whereby a signal is sent into the ground via a transmitter. Some portion of the signal will be reflected from the subsurface material, which is then recorded with a receiver and electronically converted into a graphic picture. In general, an object which is harder than the surrounding soil will reflect a stronger signal. Utilities, tunnels, UST's, and footings will reflect a stronger signal than the surrounding soil. Although this surface detection method may determine the location of a utility, this method does not specifically identify utilities (i.e., water vs. gas, electrical vs. telephone); hence, verification may be necessary using other methods. This method is somewhat limited when used in areas with clay soil types or with a high water table.

6.2 Passive Detection Surveys

Acoustic Surveys

Acoustic location methods are generally most applicable to waterlines or gas lines. A highly sensitive Acoustic Receiver listens for background sounds of water flowing (at joints, leaks, etc.) or to sounds introduced into the water main using a transducer. Acoustics may also be applicable to determine the location of plastic gas lines.

Thermal Imaging

Thermal (i.e., infrared) imaging is a passive method for detecting the heat emitted by an object. Electronics in the infrared camera convert subtle heat differentials into a visual image on the viewfinder or a monitor. The operator does not look for an exact temperature; rather they look for heat anomalies (either elevated or suppressed temperatures) characteristic of a potential utility line.

The thermal fingerprint of underground utilities results from differences in temperature between the atmosphere and the fluid present in a pipe or the heat generated by electrical resistance. In addition, infrared scanners may be capable of detecting differences in the compaction, temperature and moisture content of underground utility trenches. High-performance thermal imagery can detect temperature differences to hundredths of a degree.

6.3 Intrusive Detection Surveys

Vacuum Excavation

Vacuum excavation is used to physically expose utility services. The process involves removing the surface material over approximately a 1' x 1' area at the site location. The air-vacuum process proceeds with the simultaneous action of compressed air-jets to loosen soil and vacuum extraction of the resulting

debris. This process ensures the integrity of the utility line during the excavation process, as no hammers, blades, or heavy mechanical equipment comes into contact with the utility line, eliminating the risk of damage to utilities. The process continues until the utility is uncovered. Vacuum excavation can be used at the proposed site location to excavate below the "utility window" which is usually 8 feet.

Hand Excavation

When the identification and location of underground utilities cannot be positively confirmed through document reviews and/or other methods, borings and excavations may be cleared via the use of non-conductive hand tools. This should always be done in conjunction with the use of detection equipment. This would be required for all locations where there is a potential to impact buried utilities. The minimum hand-excavation depth that must be reached is to be determined considering the geographical location of the work site. This approach recognizes that the placement of buried utilities is influenced by frost line depths that vary by geographical region. Attachment 2 presents frost line depths for the regions of the contiguous United States. At a minimum, hand excavation depths must be at least to the frost line depth (see Attachment 2) plus two (2) feet, but never less than 4 feet below ground surface (bgs). For hand excavation, the hole created must be reamed large enough to be at least the diameter of the drill rig auger or bit prior to drilling. For soil gas surveys, the survey probe shall be placed as close as possible to the cleared hand excavation. It is important to note that a post-hole digger must not be used in this type of hand excavation activity.

Tile Probe Surveys

For some soil types, site conditions, and excavation requirements, non-conductive tile probes may be used. A tile probe is a "T"-handled rod of varying lengths that can be pushed into the soil to determine if any obstructions exist at that location. Tile probes constructed of fiberglass or other nonconductive material are readily-available from numerous vendors. Tile probes must be performed to the same depth requirements as previously specified. As with other types of hand excavating activities, the use of a non-conductive tile probe, should always be in conjunction with suitable utility locating detection equipment.

7.0 INTRUSIVE ACTIVITIES SUMMARY

The following list summarizes the activities that must be performed prior to beginning subsurface activities:

1. Map and mark all subsurface locations and excavation boundaries using white paint or markers specified by the client or property owner.

2. Notify the property owner and/or client that the locations are marked. At this point, drawings of locations or excavation boundaries shall be provided to the property owner and/or client so they may initiate (if applicable) utility clearance.

   Note: Drawings with confirmed locations should be provided to the property owner and/or client as soon as possible to reduce potential time delays.

3. Notify "One Call" service. If possible, arrange for an appointment to show the One Call representative the surface locations or excavation boundaries in person. This will provide a better location designation to the utilities they represent. You should have additional drawings should you need to provide plot plans to the One Call service.

4. Implement supplemental utility detection techniques as necessary and appropriate to conform utility locations or the absence thereof.

5. Complete Attachment 3, Utility Clearance Form. This form should be completed for each excavation location. In situations where multiple subsurface locations exist within the close proximity of one another, one form may be used for multiple locations provided those locations are noted on the Utility Clearance Form. Upon completion, the Utility Clearance Form and revised/annotated utility location map becomes part of the project file.

8.0 REFERENCES

OSHA Letter of Interpretation, Mr. Joseph Caldwell, Attachment 4
OSHA 29 CFR 1926(b)(2)
OSHA 29 CFR 1926(b)(3)
TtNUS Utility Locating and Clearance Policy
TtNUS SOP GH-3.1; Resistivity and Electromagnetic Induction
TtNUS SOP GH-3.2; Magnetic and Metal Detection Surveys
TtNUS SOP GH-3.4; Ground-penetrating Radar Surveys

ATTACHMENT 1
LISTING OF UNDERGROUND UTILITY CLEARANCE RESOURCES

American Public Works Association
2345 Grand Boulevard, Suite 500, Kansas City, MO 64108-2625
Phone (816) 472-6100 • Fax (816) 472-1610
Web www.apwa.net • E-mail apwa@apwa.net

ONE-CALL SYSTEMS INTERNATIONAL CONDENSED DIRECTORY

Alabama
Alabama One-Call
1-800-292-8525

Alaska
Locate Call Center of Alaska, Inc.
1-800-478-3121

Arizona
Arizona Blue Stake
1-800-782-5348

Arkansas
Arkansas One Call System, Inc.
1-800-482-8998

California
Underground Service Alert North
1-800-227-2600
Underground Service Alert of Southern California
1-800-227-2600

Colorado
Utility Notification Center of Colorado
1-800-922-1987

Connecticut
Call Before You Dig
1-800-922-4455

Delaware
Miss Utility of Delmarva
1-800-282-8555

Florida
Sunshine State One-Call of Florida, Inc.
1-800-432-4770

Georgia
Underground Protection Center, Inc.
1-800-282-7411

Hawaii
Underground Service Alert North
1-800-227-2600

Idaho
Dig Line Inc.
1-800-342-1585
Kootenai County One-Call
1-800-428-4950
Shoshone - Benewah One-Call
1-800-398-3285

Illinois
JULIE, Inc.
1-800-892-0123
Digger (Chicago Utility Alert Network)
312-744-7000

Indiana
Indiana Underground Plant Protection Service
1-800-382-5544

Iowa
Iowa One-Call
1-800-292-8989

Kansas
Kansas One-Call System, Inc.
1-800-344-7233

Kentucky
Kentucky Underground Protection Inc.
1-800-752-6007

Louisiana
Louisiana One Call System, Inc.
1-800-272-3020

Maine
Dig Safe System, Inc.
1-888-344-7233

Maryland
Miss Utility
1-800-257-7777
Miss Utility of Delmarva
1-800-282-8555

Massachusetts
Dig Safe System, Inc.
1-888-344-7233

Michigan
Miss Dig System, Inc.
1-800-482-7171

Minnesota
Gopher State One Call
1-800-252-1166

Mississippi
Mississippi One-Call System, Inc
1-800-227-6477

Missouri
Missouri One-Call System, Inc.
1-800-344-7483

Montana
Utilities Underground Protection Center
1-800-424-5555
Montana One Call Center
1-800-551-8344

Nebraska
Diggers Hotline of Nebraska
1-800-331-5666

Nevada
Underground Service Alert North
1-800-227-2600

New Hampshire
Dig Safe System, Inc.
1-888-344-7233

New Jersey
New Jersey One Call
1-800-272-1000

New Mexico
New Mexico One Call System, Inc.
1-800-321-2537
Las Cruces- Dona Ana Blue Stakes
1-888-526-0400

New York
Dig Safely New York
1-800-962-7962
New York City- Long Island One Call Center
1-800-272-4480

North Carolina
The North Carolina One-Call Center, Inc.
1-800-632-4949

North Dakota
North Dakota One-Call
1-800-795-0555

Ohio
Ohio Utilities Protection Service
1-800-362-2764
Oil & Gas Producers Underground Protect'n Svc
1-800-925-0988

Oklahoma
Call Okie
1-800-522-6543

Oregon
Oregon Utility Notification Center/One Call Concepts
1-800-332-2344

Pennsylvania
Pennsylvania One Call System, Inc.
1-800-242-1776

Rhode Island
Dig Safe System, Inc.
1-888-344-7233

South Carolina
Palmetto Utility Protection Service Inc.
1-888-721-7877

South Dakota
South Dakota One Call
1-800-781-7474

Tennessee
Tennessee One-Call System, Inc.
1-800-351-1111

ATTACHMENT 1 (Continued)

Texas
Texas One Call System
1-800-245-4545
Texas Excavation Safety System, Inc.
1-800-344-8377
Lone Star Notification Center
1-800-669-8344

Utah
Blue Stakes of Utah
1-800-662-4111

Vermont
Dig Safe System, Inc.
1-888-344-7233

Virginia
Miss Utility of Virginia
1-800-552-7001
Miss Utility (Northern Virginia)
1-800-257-7777

Washington
Utilities Underground Location Center
1-800-424-5555
Northwest Utility Notification Center
1-800-553-4344
Inland Empire Utility Coordinating Council
509-456-8000

West Virginia
Miss Utility of West Virginia, Inc.
1-800-245-4848

Wisconsin
Diggers Hotline, Inc.
1-800-242-8511

Wyoming
Wyoming One-Call System, Inc.
1-800-348-1030
Call Before You Dig of Wyoming
1-800-849-2476

District of Columbia
Miss Utility
1-800-257-7777

Alberta
Alberta One-Call Corporation
1-800-242-3447

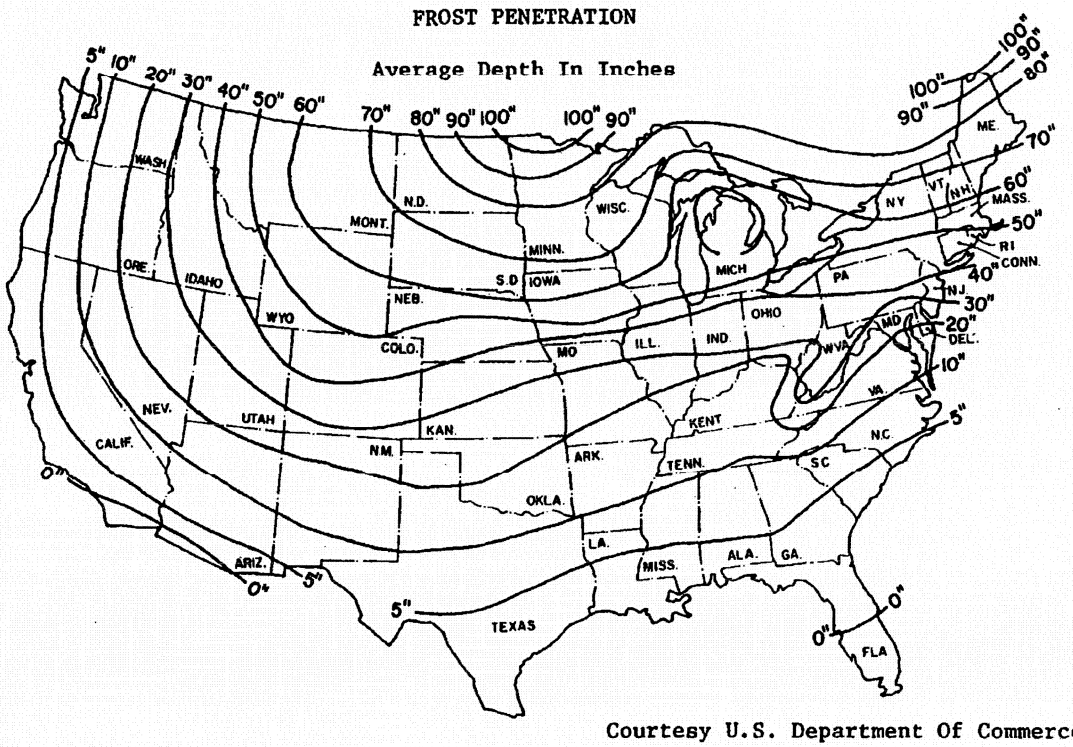
British Columbia
BC One Call
1-800-474-6886

Ontario
Ontario One-Call System
1-800-400-2255

Quebec
Info-Excavation
1-800-663-9228

ATTACHMENT 2

FROST LINE PENETRATION DEPTHS BY GEOGRAPHIC LOCATION



Courtesy U.S. Department Of Commerce

ATTACHMENT 3
UTILITY CLEARANCE FORM

Client: _____ Project Name: _____

Project No.: _____ Completed By: _____

Location Name: _____ Work Date: _____

Excavation Method/Overhead Equipment: _____

			Circle One
1.	Underground Utilities		
	a)	Review of existing maps?	yes no N/A
	b)	Interview local personnel?	yes no N/A
	c)	Site visit and inspection?	yes no N/A
	d)	Excavation areas marked in the field?	yes no N/A
	e)	Utilities located in the field?	yes no N/A
	f)	Located utilities marked/added to site maps?	yes no N/A
	g)	Client contact notified Name _____ Telephone: _____ Date: _____	yes no N/A
	g)	State One-Call agency called? Caller: _____ Ticket Number: _____ Date: _____	yes no N/A
	h)	Geophysical survey performed? Survey performed by: _____ Method: _____ Date: _____	yes no N/A
	i)	Hand excavation performed (with concurrent use of utility detection device)? Completed by: _____ Total depth: _____ feet Date: _____	yes no N/A
	j)	Trench/excavation probed? Probing completed by: _____ Depth/frequency: _____ Date: _____	yes no N/A

			Present Absent
2.	Overhead Utilities		
	a)	Determination of nominal voltage	yes no N/A
	b)	Marked on site maps	yes no N/A
	c)	Necessary to lockout/insulate/re-route	yes no N/A
	d)	Document procedures used to lockout/insulate/re-route	yes no N/A
	e)	Minimum acceptable clearance (SOP Section 5.2): _____	

3. Notes:

_____

_____

_____

Approval:

_____ _____

Site Manager/Field Operations Leader Date

c: PM/Project File
Program File

ATTACHMENT 4
OSHA LETTER OF INTERPRETATION

Mr. Joseph Caldwell
Consultant
Governmental Liaison
Pipeline Safety Regulations
211 Wilson Boulevard
Suite 700
Arlington, Virginia 22201

Re: Use of hydro-vacuum or non-conductive hand tools to locate underground utilities.

Dear Mr. Caldwell:

In a letter dated July 7, 2003, we responded to your inquiry of September 18, 2002, regarding the use of hydro-vacuum equipment to locate underground utilities by excavation. After our letter to you was posted on the OSHA website, we received numerous inquiries that make it apparent that aspects of our July 7 letter are being misunderstood. In addition, a number of industry stakeholders, including the National Utility Contractors Association (NUCA), have provided new information regarding equipment that is available for this work.

To clarify these issues, we are withdrawing our July 7 letter and issuing this replacement response to your inquiry.

Question: *Section 1926.651 contains several requirements that relate to the safety of employees engaged in excavation work. Specifically, paragraphs (b)(2) and (b)(3) relate in part to the safety of the means used to locate underground utility installations that, if damaged during an uncovering operation, could pose serious hazards to employees.*

Under these provisions, what constitutes an acceptable method of uncovering underground utility lines, and further, would the use of hydro-vacuum excavation be acceptable under the standard?

Answer

Background

Two sections of 29 CFR 1926 Subpart P (Excavations), 1926.651(Specific excavation requirements), govern methods for uncovering underground utility installations. Specifically, paragraph (b)(2) states:

> When utility companies or owners cannot respond to a request to locate underground utility installations within 24 hours * * * or cannot establish the exact location of these installations, the employer may proceed, provided the employer does so with caution, and provided detection equipment or other acceptable means to locate utility installations are used. (emphasis added).

Paragraph (b)(3) provides:

ATTACHMENT 4 (Continued)

> When excavation operations approach the estimated location of underground installations, the exact location of the installations shall be determined by safe and acceptable means. (emphasis added).

Therefore, "acceptable means" must be used where the location of the underground utilities have not been identified by the utility companies and detection equipment is not used.

Subpart P does not contain a definition of either "other acceptable means" or "safe and acceptable means." The preambles to both the proposed rule and the final rule discussed the rationale behind the wording at issue. For example, the preamble to the proposed rule, 52 Fed. Reg. 12301 (April 15, 1987), noted that a 1972 version of this standard contained language that specified "careful probing or hand digging" as the means to uncover utilities. The preamble then noted that an amendment to the 1972 standard later deleted that language "to allow other, *equally effective means* of locating such installations." The preamble continued that in the 1987 proposed rule, OSHA again proposed using language in section (b)(3) that would provide another example of an acceptable method of uncovering utilities that could be used *where the utilities have not been marked and detection equipment is not being used* – "probing with hand-held tools." This method was rejected in the final version of 29 CFR 1926. As OSHA explained in the preamble to the final rule, 54 Fed. Reg. 45916 (October 31, 1989):

> OSHA received two comments * * * and input from ACCSH [OSHA's Advisory Committee on Construction Safety and Health] * * * on this provision. All commenters recommended dropping 'such as probing with hand-held tools' from the proposed provision, because this could create a hazard to employees by damaging the installation or its insulation.

In other words, the commenters objected to the use of hand tools being used unless detection equipment was used in conjunction with them. OSHA then concluded its discussion relative to this provision by agreeing with the commentators and ultimately not including any examples of "acceptable means" in the final provision.

Non-conductive hand tools are permitted

This raises the question of whether the standard permits the use of hand tools alone -- without also using detection equipment. NUCA and other industry stakeholders have recently informed us that non-conductive hand tools that are appropriate to be used to locate underground utilities are now commonly available.

Such tools, such as a "shooter" (which has a non-conductive handle and a snub nose) and non-conductive or insulated probes were not discussed in the rulemaking. Since they were not considered at that time, they were not part of the class of equipment that was thought to be unsafe for this purpose. Therefore, we conclude that the use of these types of hand tools, when used with appropriate caution, is an "acceptable means" for locating underground utilities.

ATTACHMENT 4 (Continued)

Hydro-vacuum excavation

It is our understanding that some hydro-vacuum excavation equipment can be adjusted to use a minimum amount of water and suction pressure. When appropriately adjusted so that the equipment will not damage underground utilities (especially utilities that are particularly vulnerable to damage, such as electrical lines), use of such equipment would be considered a "acceptable means" of locating underground utilities. However, if the equipment cannot be sufficiently adjusted, then this method would not be acceptable under the standard.

Other technologies

We are not suggesting that these are the only devices that would be "acceptable means" under the standard. Industry stakeholders have informed us that there are other types of special excavation equipment designed for safely locating utilities as well.

We apologize for any confusion our July 7 letter may have caused. If you have further concerns or questions, please feel free to contact us again by fax at: U.S. Department of Labor, OSHA, Directorate of Construction, Office of Construction Standards and Compliance Assistance, fax # 202-693-1689. You can also contact us by mail at the above office, Room N3468, 200 Constitution Avenue, N.W., Washington, D.C. 20210, although there will be a delay in our receiving correspondence by mail.

Sincerely,

Russell B. Swanson, Director
Directorate of Construction

NOTE: OSHA requirements are set by statute, standards and regulations. Our interpretation letters explain these requirements and how they apply to particular circumstances, but they cannot create additional employer obligations. This letter constitutes OSHA=s interpretation of the requirements discussed. Note that our enforcement guidance may be affected by changes to OSHA rules. Also, from time to time we update our guidance in response to new information. To keep apprised of such developments, you can consult OSHA's website at http://www.osha.gov.

ATTACHMENT IV

EQUIPMENT INSPECTION CHECKLIST

ATTACHMENT V

SAFE WORK PERMITS

SAFE WORK PERMIT
DECONTAMINATION ACTIVITIES
NAVSTA MAYPORT, FLORIDA

Permit No. _____ Date: _____ Time: From _____ to _____

SECTION I: General Job Scope

I. **Work limited to the following (description, area, equipment used):** Decontamination of MacroCore Samplers (or similar equipment) drive rods, associated sampling equipment typically occurs within 5-gallon buckets (soap and water wash and rinse). Typically only the acetate liner and the cutting shoe actually contact the sample media.

II. **Primary Hazards:** Potential hazards associated with this task include lifting (strain/muscle pulls lifting heavy drilling equipment); Stacked equipment - falling hazards; slips, trips, and falls – slippery surfaces. The direction provided in this HASP, Table 5-1 and this Safe Work Permit are directed at controlling these hazards. It should be noted that not every situation can be anticipated. Site personnel will therefore have to conduct on-site hazard assessments on a per task basis and employ controls as necessary.

III. **Field Crew:** _____

IV. **On-site Inspection conducted** ☐ Yes ☐ No Initials of Inspector _____ TtNUS
Equipment Inspection required ☐ Yes ☒ No Initials of Inspector _____ TtNUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

V. **Protective equipment required**
Level D ☒ Level B ☐
Level C ☐ Level A ☐

Respiratory equipment required
Yes ☐ Specify on the reverse
No ☒

Modifications/Exceptions: None anticipated

VI.

Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
Liquinox (soap)	None Required	None	Eye irritant/flush with clean water
VOCs – Chlorinated Solvents	No monitoring required	None	Exposure not anticipated

Primary Route of Exposure/Hazard: Soap – Contact - eye irritant; ingestion- nausea possible vomiting, diarrhea; VOCs/Chlorinated Solvents – irritating at all points of contact; CNS effects (blurred vision, narcotic effects, dizziness); Extremely high concentrations may result in Irregular heartbeats, possible cardiac arrest. Chronic or repeated exposures may result in defatting of the skin and dermatitis.

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. **Additional Safety Equipment/Procedures**

Hard-hat	☒ Yes ☐ No	Hearing Protection (Plugs/Muffs)	☒ Yes ☐ No
Safety Glasses	☒ Yes ☐ No	Safety belt/harness	☐ Yes ☒ No
Chemical/splash goggles	☐ Yes ☒ No	Radio/Cellular Phone	☐ Yes ☒ No
Splash Shield	☒ Yes ☐ No	Barricades	☐ Yes ☒ No
Splash suits/coveralls	☐ Yes ☒ No	Gloves (Type – Nitrile)	☒ Yes ☐ No
Impermeable apron	☒ Yes ☐ No	Work/rest regimen	☐ Yes ☒ No
Steel toe Work shoes or boots	☒ Yes ☐ No	Chemical Resistant Boot Covers	☐ Yes ☒ No
High Visibility vest	☐ Yes ☒ No	Tape up/use insect repellent	☐ Yes ☒ No
First Aid Kit	☒ Yes ☐ No	Fire Extinguisher	☒ Yes ☐ No
Safety Shower/Eyewash	☐ Yes ☒ No	Other	☐ Yes ☐ No

Modifications/Exceptions: Impermeable aprons may be used to control splashing/overspray. If this is inadequate replace with rainsuit or PE coated Tyvek. Hard hat, splash shield, and hearing protection will be worn when working near operating equipment or during pressure washer/steam cleaner operation. Gloves – Nitrile (surgeons style) or nitrile type outer gloves for deconning associated sampling equipment.

VIII. **Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed	☐	☐	☒
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place	☐	☐	☐
Physical Hazards Identified and Isolated (Splash and containment barriers)	☐	☐	☐
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).	☐	☐	☐

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.). ☐ Yes ☒ No
If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. **Special instructions, precautions:** Suspend site activities in the event of inclement weather (storms, high winds, etc.). Employ proper lifting techniques as described on Table 5-1 for Mobilization/Demobilization. Use washing/drying racks to secure heavy equipment to prevent items from falling during washing and drying. Keep hoses gathered, and work place free from clutter to prevent trips and falls. A site control boundary for this activity is 10-feet surrounding the point of operation. Follow directions provided in the MSDSs for any decontamination solvents/solutions used in the decontamination procedure.

Permit Issued by: _____ Permit Accepted by: _____

SAFE WORK PERMIT
MOBILIZATION/DEMOBILIZATION ACTIVITIES
NAVSTA MAYPORT, FLORIDA

Permit No. _____ Date: _____ Time: From _____ to _____

SECTION I: General Job Scope

I. **Work limited to the following (description, area, equipment used):** Mobilization and demobilization activities. These activities include securing the necessary utility clearances, and identifying/isolating physical hazards; Secure, construct, or equip IDW storage facilities to support the field activities. In addition, this task will include unpacking equipment, equipment inspections, and review of planning documents.

II. **Primary Hazards:** Potential hazards associated with this task are primarily physical in nature including lifting, cuts and lacerations, pinches and compressions; flying projectiles; slips, trips, and falls; insect and animal bites. The direction provided in this HASP, Table 5-1 and this Safe Work Permit are directed at controlling these hazards.

III. **Field Crew:** _____

IV. **On-site Inspection conducted** ☐ Yes ☐ No Initials of Inspector _____TtNUS
Equipment Inspection required ☒ Yes ☐ No Initials of Inspector _____TtNUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

V. **Protective equipment required** Level D ☒ Level B ☐
Respiratory equipment required Yes ☐ See Reverse / No ☒
Modifications/Exceptions: None anticipated

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
None anticipated	NA	NA	NA

Primary Route of Exposure/Hazard: None

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. **Additional Safety Equipment/Procedures**

Hard-hat	☐ Yes	☐ No	Hearing Protection (Plugs/Muffs)	☐ Yes	☐ No
Safety Glasses	☐ Yes	☐ No	Safety belt/harness	☐ Yes	☒ No
Chemical/splash goggles	☐ Yes	☒ No	Radio/Cellular Phone	☐ Yes	☐ No
Splash Shield	☐ Yes	☐ No	Barricades	☐ Yes	☐ No
Splash suits/coveralls	☐ Yes	☐ No	Gloves (Type – Leather/Cotton)	☐ Yes	☐ No
Impermeable apron	☐ Yes	☐ No	Work/rest regimen	☐ Yes	☒ No
Steel toe Work shoes or boots	☒ Yes	☐ No	Chemical Resistant Boot Covers	☐ Yes	☐ No
High Visibility vest	☐ Yes	☐ No	Tape up/use insect repellent	☐ Yes	☐ No
First Aid Kit	☒ Yes	☐ No	Fire Extinguisher	☐ Yes	☐ No
Safety Shower/Eyewash	☐ Yes	☐ No	Other	☐ Yes	☐ No

Modifications/Exceptions: If there are Flying projectiles– Safety glasses and/or splash shield (i.e., hammering, power tool operation); If you have to raise your voice to be heard by someone within 2-feet of you hearing protection is required (i.e., equipment/power tool operation); If overhead hazards or bump hazards or you are working near operating equipment hard hats will be employed. If you are working in or near traffic patterns then wear High Visibility Vests. Snake chaps will be required if/when entering tall brush and unmaintained areas.

VIII. **Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed	☐	☐	☐
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place	☐	☐	☐
Physical Hazards Identified and Isolated	☐	☐	☐
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).	☐	☐	☐

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.). ☐ Yes ☒ No
If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. **Special instructions, precautions:** Suspend site activities in the event of inclement weather. Employ proper lifting techniques as described on Table 5-1 for this task. Caution should be exercised when working along the water. The potential for natural hazards including snakes, alligators may exist given the region. In support of this and potential hazard and associated water hazards use the buddy system in these areas. Have an immediate means to extract personnel from the water should someone accidentally fall in.

Permit Issued by:_____ Permit Accepted by:_____

SAFE WORK PERMIT
SOIL BORINGS - SUBSURFACE SOIL SAMPLING-DPT
NAVSTA MAYPORT, FLORIDA

Permit No._____ Date:_____ Time: From_____ to_____

SECTION I: General Job Scope

I. **Work limited to the following (description, area, equipment used):** This task includes Soil sampling collected using a MacroCore Sampler disposable trowels. Once the sample is obtained aliquots will be subjected to immunoassay testing for PCBs.

II. **Primary Hazards:** Potential hazards associated with this task includes cuts and lacerations (cutting tubing/acetate liners), pinches and compressions opening MacroCore Samplers and handling containers); contact with contaminated media. In addition, there are chemical hazards associated with working with the immunoassay kits associated with the reagents that are used. The direction provided in this HASP, Table 5-1 and this Safe Work Permit are directed at controlling these hazards.

III. **Field Crew:** _____

IV. **On-site Inspection conducted** ☐ Yes ☐ No Inspector Initials _____ TtNUS
Equipment Inspection required ☐ Yes ☐ No Inspector Initials _____ TtNUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

V. **Protective equipment required**
Level D ☒ Level B ☐
Level C ☐ Level A ☐

Respiratory equipment required
Yes ☐ See Reverse
No ☒

Modifications/Exceptions: _____

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
VOCs/Chlorinated solvents	FID	10 ppm in BZ sustained	Suspend activities until reading subside To background levels
Dusts	Visual	> 2mg/kg	Area Wetting - dust suppression

Primary Route of Exposure/Hazard: VOCs/Chlorinated solvents – irritating at all points of contact; CNS effects (blurred vision, narcotic effects, dizziness); Irregular heartbeats, possible cardiac arrest. Extremely high concentrations may result in Irregular heartbeats, possible cardiac arrest. Chronic or repeated exposures may result in defatting of the skin and dermatitis. Two of the active ingredients within the immunoassay kits are methanol and sulfuric acid. Methanol (Sample Extraction Kit) is a flammable liquid. Ingestion or inhalation may cause headaches, nausea, vomiting, dizziness, narcotic effect, CNS depression, gastrointestinal irritation, blindness and hearing loss. Short term exposure may cause irritation at all points of contact. Long term exposure may cause dermatitis. Exposure can be facilitated through the skin, minimize contact, use in open air environments. Sulfuric acid is a corrosive at all points of contact. Inhalation/ingestion may cause severe burns as well as asphyxia due to constriction of the tissue and pulmonary adema. Follow the instruction provided in the MSDSs for these substances.

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. **Additional Safety Equipment/Procedures**

Hard-hat	☐ Yes ☐ No	Hearing Protection (Plugs/Muffs)	☐ Yes ☐ No
Safety Glasses	☒ Yes ☐ No	Safety belt/harness	☐ Yes ☒ No
Chemical/splash goggles	☐ Yes ☒ No	Radio/Cellular Phone	☒ Yes ☐ No
Splash Shield	☐ Yes ☐ No	Barricades	☐ Yes ☒ No
Splash suits/coveralls	☐ Yes ☐ No	Gloves (Type – Nitrile surgeons)	☒ Yes ☐ No
Impermeable apron	☐ Yes ☐ No	Work/rest regimen	☐ Yes ☐ No
Steel toe Work shoes or boots	☒ Yes ☐ No	Chemical Resistant Boot Covers	☐ Yes ☐ No
High Visibility vest	☐ Yes ☐ No	Tape up/use insect repellent	☒ Yes ☐ No
First Aid Kit	☒ Yes ☐ No	Fire Extinguisher	☒ Yes ☐ No
Safety Shower/Eyewash	☒ Yes ☐ No	Other	☐ Yes ☐ No

Modifications/Exceptions: Hard hat, hearing protection, and safety glasses for sampling at the DPT rig or within the established exclusion zones for soil boring; Tape up and use insect repellent to combat insect bites.

VIII. **Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed	☐	☐	☐
Vehicle and Foot Traffic Routes Cleared and Established	☐	☐	☐
Physical Hazards Barricaded and Isolated	☐	☐	☐
Emergency Equipment Staged	☐	☐	☐

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.) ☐ Yes ☐ No
If yes, complete permit required or contact Health Sciences, Pittsburgh Office

X. **Special instructions, precautions:** Personal sampling at remote locations will bag contaminated PPE and reusable sampling tools and using hygienic wipes for hands and face until persons can reach the structured decontamination unit. Minimize contact with potentially contaminated media. Suspend site activities in the event of inclement weather. Employ proper lifting techniques as described on Table 5-1 for mobilization/demobilization. For remote locations pack glass ware in hard sided containers to prevent possible lacerations due to falls and breakage of glassware. Placed used test kit ampoules into hard sided containers for transport and disposal to avoid potential puncture and laceration. Provisions for protection against the sun should be provided to site personnel including shade providing devices, hats, sun block, wrap around sun glasses.

Permit Issued by:_____ Permit Accepted by:_____

SAFE WORK PERMIT
SOIL BORING ACTIVITIES
NAVSTA MAYPORT, FLORIDA

Permit No. _____ Date: _____ Time: From _____ to _____

SECTION I: General Job Scope

I. **Work limited to the following (description, area, equipment used):** Surface and subsurface soil boring samples will be acquired using DPT and MacroCore Samplers or similar equipment to continuously sample to varying depths. Personnel participating in this activity will be required to meet the requirements of both the Safe Work Permit for Soil Boring and Subsurface Soil Sampling.

II. **Primary Hazards:** Potential hazards associated with this task include cuts and lacerations (cutting bags, well riser, etc.), pinches and compressions opening samplers (wrenches slipping) and handling containers; pressurized systems (hydraulic lines; contact with contaminated media, and noise. The direction provided in this HASP, Table 5-1 and this Safe Work Permit are directed at controlling these hazards.

III. **Field Crew:** _____

IV. **On-site Inspection conducted** ☐ Yes ☐ No Inspector Initials _____ TtNUS
Equipment Inspection required ☒ Yes ☐ No Inspector Initials _____ TtNUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

V. **Protective equipment required**
Level D ☒ Level B ☐
Level C ☐ Level A ☐

Respiratory equipment required
Yes ☐ See Reverse
No ☒

Modifications/Exceptions: _____

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
VOCs/Chlorinated solvents	FID	10 ppm in BZ sustained	Suspend activities until reading subside To background levels
Dusts	Visual	> 2mg/kg	Area Wetting - dust suppression

Primary Route of Exposure/Hazard: VOCs/Chlorinated solvents – Irritating at all points of contact; CNS effects (blurred vision, narcotic effects, dizziness); Irregular heartbeats, possible cardiac arrest. Extremely high concentrations may result in Irregular heartbeats, possible cardiac arrest. Chronic or repeated exposures may result in defatting of the skin and dermatitis.

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. **Additional Safety Equipment/Procedures**(Note to FOL and/or SHSO: Each item must be checked Yes or No)

Hard-hat	☒ Yes ☐ No	Hearing Protection (Plugs/Muffs)	☒ Yes ☐ No
Safety Glasses	☒ Yes ☐ No	Safety belt/harness	☐ Yes ☒ No
Chemical/splash goggles	☐ Yes ☒ No	Radio/Cellular Phone	☐ Yes ☐ No
Splash Shield	☐ Yes ☒ No	Barricades	☒ Yes ☐ No
Splash suits/coveralls	☐ Yes ☐ No	Gloves (Type – See Note)	☒ Yes ☐ No
Impermeable apron	☐ Yes ☐ No	Work/rest regimen	☐ Yes ☒ No
Steel toe Work shoes or boots	☒ Yes ☐ No	Chemical Resistant Boot Covers	☐ Yes ☐ No
High Visibility vest	☐ Yes ☐ No	Tape up/use insect repellent	☐ Yes ☐ No
First Aid Kit	☒ Yes ☐ No	Fire Extinguisher	☒ Yes ☐ No
Safety Shower/Eyewash	☒ Yes ☐ No	Other	☐ Yes ☐ No

Modifications/Exceptions: Tape up and use insect repellent to combat insect bites in forested or areas of heavy vegetation; Fire extinguisher for all vehicles in excess of 1-ton; Nitrile or neoprene supported gloves and impermeable aprons for handling contaminated auger flights, nitrile surgeon gloves for handling sampling tools and well screens and risers.

VIII. **Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed	☐	☐	☐
Vehicle and Foot Traffic Routes Cleared and Established	☐	☐	☐
Physical Hazards Barricaded and Isolated	☐	☐	☐
Emergency Equipment Staged	☐	☐	☐

IX. **Additional Permits required** (Utility Locating and Excavation Clearance – Attachment II).. ☒ Yes ☐ No
If yes, SHSO complete permit or contact Health Sciences, Pittsburgh Office(412) 921-7090

X. **Special instructions, precautions:** Follow the safe work practices for drilling specified in Section 5.8 of this HASP. Use proper lifting techniques defined in Table 5-1 for mobilization/demobilization. Select the best approach routes possible to avoid tipping over. Flag or barricade sink holes/soft spots or pits. Personnel decontamination will consist of disposing of single use PPE and washing hands and face prior to breaks or meals. The potential for exposure can occur only through mechanical dispersion (inhalation) or hand to mouth contact (ingestion) through poor work hygiene practices. Utility clearance will proceed all subsurface installation.

Permit Issued by: _____ Permit Accepted by: _____

SAFE WORK PERMIT
GEOGRAPHICAL SURVEYING ACTIVITIES
NAVSTA MAYPORT, FLORIDA

Permit No. _____ Date: _____ Time: From _____ to _____

SECTION I: General Job Scope

I. **Work limited to the following (description, area, equipment used):** GPS surveying – Locate and mark sample grids and sample locations within the grids. There are 21 grids. Associated with this activity will be brush cutting using brush hooks and machetes to gain access to the sample location/coordinates.

II. **Primary Hazards:** Potential hazards associated with this task are primarily physical in nature including lifting, cuts and lacerations, pinches and compressions; flying projectiles; slips, trips, and falls; insect and animal bites The direction provided in this HASP, Table 5-1 and this Safe Work Permit are directed at controlling these hazards

IV. **Field Crew:** _____

IV. **On-site Inspection conducted** ☐ Yes ☐ No Initials of Inspector _____ TtNUS

Equipment Inspection required ☐ Yes ☒ No Initials of Inspector _____ TtNUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

V. **Protective equipment required**

Level D ☒ Level B ☐
Level C ☐ Level A ☐

Respiratory equipment required

Yes ☐
No ☒

See Reverse

Modifications/Exceptions: None anticipated

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
None anticipated	NA	NA	NA

Primary Route of Exposure/Hazard: None

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. **Additional Safety Equipment/Procedures**

Hard-hat	☒ Yes ☐ No	Hearing Protection (Plugs/Muffs)	☐ Yes ☒ No
Safety Glasses	☒ Yes ☐ No	Safety belt/harness	☐ Yes ☒ No
Chemical/splash goggles	☐ Yes ☒ No	Radio/Cellular Phone	☒ Yes ☐ No
Splash Shield	☐ Yes ☒ No	Barricades	☐ Yes ☒ No
Splash suits/coveralls	☐ Yes ☒ No	Gloves (Type – Leather/Cotton)	☐ Yes ☐ No
Impermeable apron	☐ Yes ☒ No	Work/rest regimen	☐ Yes ☒ No
Steel toe Work shoes or boots	☒ Yes ☐ No	Chemical Resistant Boot Covers	☐ Yes ☒ No
High Visibility vest	☒ Yes ☐ No	Tape up/use insect repellent	☒ Yes ☐ No
First Aid Kit	☒ Yes ☐ No	Fire Extinguisher	☐ Yes ☐ No
Safety Shower/Eyewash	☐ Yes ☒ No	Other (See Below)	☒ Yes ☐ No

Modifications/Exceptions: Pant legs are to be taped to work boots to prevent entry under the clothing by ticks and other insects when working in heavy brush and wooded areas. Use repellants applied directly to the clothing at all entry points (pants to boots, shirt to pants, etc.) Tyvek coveralls may be used in heavy brush to protect against natural hazards (e.g., ticks) and also to make identification easier. If working in areas where snakes are a threat, wear snake chaps to protect against bites. Safety glasses and hard hats should be worn when cutting sight lines; leather or cotton work gloves when cutting brush.

VIII. **Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed	☐	☐	☒
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place	☐	☐	☐
Physical Hazards Identified and Isolated	☐	☐	☐
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).	☐	☐	☐

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.). ☐ Yes ☒ No
If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. **Special instructions, precautions:** Suspend site activities in the event of inclement weather. Employ proper lifting techniques as described on Table 5-1 for this task. Employ sharp tools for cutting brush, when not in use keep the sheath on the blade. Maintain at least a 10-feet perimeter around anyone cutting brush.

Permit Issued by: _____ Permit Accepted by: _____

SAFE WORK PERMIT
IDW MANAGEMENT ACTIVITIES
NAVSTA MAYPORT, FLORIDA

Permit No. _____ Date: _____ Time: From _____ to _____

SECTION I: General Job Scope

I. **Work limited to the following (description, area, equipment used):** IDW management activities includes containerization, staging, monitoring for leaks of IDW accumulated wastes. Wastes types include soil cuttings, decontamination wash waters, immunoassay expended reagents.

II. **Primary Hazards:** Potential hazards associated with this task are primarily physical in nature including lifting, pinches and compressions; flying projectiles; slips, trips, and falls. The direction provided in this HASP, Table 5-1 and this Safe Work Permit are directed at controlling these hazards.

V. **Field Crew:** _____

IV. **On-site Inspection conducted** ☐ Yes ☐ No Initials of Inspector _____ TtNUS
Equipment Inspection required ☐ Yes ☐ No Initials of Inspector _____ TtNUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

V. **Protective equipment required**
Level D ☒ Level B ☐
Level C ☐ Level A ☐

Respiratory equipment required
Yes ☐ See Reverse
No ☒

Modifications/Exceptions: None anticipated

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
None anticipated	Not Required	NA	NA

Primary Route of Exposure/Hazard: None

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. **Additional Safety Equipment/Procedures**

Hard-hat	☐ Yes ☐ No	Hearing Protection (Plugs/Muffs)	☐ Yes ☒ No
Safety Glasses	☐ Yes ☐ No	Safety belt/harness	☐ Yes ☒ No
Chemical/splash goggles	☐ Yes ☒ No	Radio/Cellular Phone	☐ Yes ☐ No
Splash Shield	☐ Yes ☒ No	Barricades	☐ Yes ☐ No
Splash suits/coveralls	☐ Yes ☒ No	Gloves (Type – Leather/Cotton)	☒ Yes ☐ No
Impermeable apron	☐ Yes ☒ No	Work/rest regimen	☐ Yes ☒ No
Steel toe Work shoes or boots	☒ Yes ☐ No	Chemical Resistant Boot Covers	☐ Yes ☒ No
High Visibility vest	☐ Yes ☒ No	Tape up/use insect repellent	☐ Yes ☐ No
First Aid Kit	☒ Yes ☐ No	Fire Extinguisher	☐ Yes ☐ No
Safety Shower/Eyewash	☐ Yes ☒ No	Other	☐ Yes ☐ No

Modifications/Exceptions: If you are using pneumatic/electric power to open drums – Safety glasses are required; If power equipment is employed to move drums or you are working near operating equipment hard hats will be employed.

VIII. Site Preparation	Yes	No	NA
Utility Locating and Excavation Clearance completed	☐	☐	☒
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place	☐	☐	☐
Physical Hazards Identified and Isolated	☐	☐	☐
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).	☐	☐	☐

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.) ☐ Yes ☒ No
If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. **Special instructions, precautions:** Suspend site activities in the event of inclement weather. Employ proper lifting techniques as described on Table 5-1 for this task. When/where possible use heavy equipment to move and place containers. When placing drums – Place the label and retention ring nut on the outside where it is readily visible/available. Place 4-drums to a pallet. Maintain a minimum distance of 4-feet between pallet rows. An IDW inventory shall be generated to provide the number of drums, contents, and volumes. This inventory should be provided to the facility contact

Permit Issued by: _____ Permit Accepted by: _____

SAFE WORK PERMIT
REMOVAL OF VEGETATION ACTIVITIES
NAVSTA MAYPORT, FLORIDA

Permit No. _____ Date: _____ Time: From _____ to _____

SECTION I: General Job Scope

I. **Work limited to the following (description, area, equipment used):** Removal of Vegetation using brush hooks, machetes, and chain saws to clear access pathways to sample locations within the WCDF.

II. **Primary Hazards:** Potential hazards associated with this task are primarily physical in nature including lifting, cuts and lacerations, pinches and compressions; flying projectiles; slips, trips, and falls; insect and animal bites. The direction provided in this HASP, Table 5-1 and this Safe Work Permit are directed at controlling these hazards.

III. **Field Crew:** _____

IV. **On-site Inspection conducted** ☐ Yes ☐ No Initials of Inspector _____ TtNUS
Equipment Inspection required ☒ Yes ☐ No Initials of Inspector _____ TtNUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

V. **Protective equipment required** Level D ☒ Level B ☐
Respiratory equipment required Yes ☐ See Reverse / No ☒
Modifications/Exceptions: None anticipated

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
None anticipated	NA	NA	NA

Primary Route of Exposure/Hazard: None

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. **Additional Safety Equipment/Procedures**

Hard-hat	☒ Yes ☐ No	Hearing Protection (Plugs/Muffs)	☒ Yes ☐ No
Safety Glasses	☒ Yes ☐ No	Safety belt/harness	☐ Yes ☒ No
Chemical/splash goggles	☐ Yes ☒ No	Radio/Cellular Phone	☐ Yes ☐ No
Splash Shield	☐ Yes ☐ No	Barricades	☐ Yes ☐ No
Splash suits/coveralls	☐ Yes ☒ No	Gloves (Type – Leather/Cotton)	☒ Yes ☐ No
Impermeable apron	☐ Yes ☒ No	Work/rest regimen	☒ Yes ☐ No
Steel toe Work shoes or boots	☒ Yes ☐ No	Chemical Resistant Boot Covers	☐ Yes ☒ No
High Visibility vest	☐ Yes ☒ No	Tape up/use insect repellent	☒ Yes ☐ No
First Aid Kit	☒ Yes ☐ No	Fire Extinguisher	☐ Yes ☐ No
Safety Shower/Eyewash	☐ Yes ☐ No	Other (Chipper shield, snake chaps)	☒ Yes ☐ No

Modifications/Exceptions: Clearing brush using hand tools – Hard hat, safety glasses, leather work gloves. Chainsaw operation – Hard hat, safety glasses, chipper shield, chainsaw chaps, leather work gloves. Snake chaps will be required on the initial access route selection and clearing. It is recommended that heavy equipment is used where possible to clear paths.

VIII. **Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed	☐	☐	☐
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place	☐	☐	☐
Physical Hazards Identified and Isolated	☐	☐	☐
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).	☐	☐	☐

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.). ☐ Yes ☒ No
If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. **Special instructions, precautions:** Suspend site activities in the event of inclement weather. Employ proper lifting techniques as described on Table 5-1 for this task. Ensure handles are of good construction (no cracks, splinters, loose heads/cutting apparatus; Blades shall be sharp without nicks and gouges in the blade; All hand tools (brush hooks, machetes, etc.) with cutting blades shall be provided with a sheath to protect individuals, when not in use; All personnel will maintain a 10-foot perimeter around persons clearing brush using hand tools. Chain saw operation - Inspect the chainsaw prior to each use. Insure the blade is adjusted and sharp, and all parts are lubricated per the manufacturer's instruction. Test all safety devices initially and then periodically to insure operational status. All personnel will maintain a 50 to 100-foot perimeter around persons clearing brush using a chainsaw. Plan your cuts (where the trees will fall); always leave yourself an escape route; Don't cut above your head. When limbing a tree, to the extent possible cut from the other side of the trunk which will serve as a shield, When clearing paths and moving debris, deadfall etc.- never stick your hands where you can't see. If you must move items from your path always pull toward your body so the article can serve as a shield should a snake be underneath. Remember that hollowed out trees, deadfalls, tree tops are nesting locations of bees, red wasps. Take a good look at the items to be removed so that you don't bring a nest down on yourself. This is labor intensive work take multiple breaks, drink plenty of water to keep hydrated. Remove as much brush from the access path as possible to eliminate tripping and falling hazards.

Permit Issued by: _____ Permit Accepted by: _____

ATTACHMENT VI

MEDICAL DATA SHEET

MEDICAL DATA SHEET

This Medical Data Sheet must be completed by all on-site personnel and kept in the command post during the conduct of site operations. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project _____

Name _____ Home Telephone _____

Address _____

Age _____ Height _____ Weight _____

Name of Next Kin _____

Drug or other Allergies _____

Particular Sensitivities _____

Do You Wear Contacts?_____

Provide a Checklist of Previous Illnesses or Exposure to Hazardous Chemicals _____

_____

_____

What medications are you presently using? _____

_____

_____

Do you have any medical restrictions? _____

_____

_____

Name, Address, and Phone Number of personal physician: _____

_____

_____

I am the individual described above. I have read and understand this HASP.

_____ _____

Signature Date

ATTACHMENT VII

MATERIAL SAFETY DATA SHEETS

Note: To FOL and/or SSO – The following MSDSs only represents those chemicals employed as part of the immunoassay kits. It is your responsibility to collect all other applicable MSDSs for all chemicals brought on-site in support of the Site-Specific Hazard Communication Program.

Material Safety Data Sheet

PCB

MATERIAL IDENTIFICATION

Manufacturer/Distributor:	Strategic Diagnostics Inc. 111 Pencader Drive Newark, DE 19702
Phone Number:	1-(302) 456-6789
Trade Names and Synonyms:	PCB (A00133; A00134)
NFPA Ratings	Health: 2 Flammability: 3 Reactivity: 1

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number	Weight Percent
Dimethylformamide DMF	68-12-2	≤ 1
Sulfuric acid Oil of Vitriol; Hydrogen Sulfate; Sulphuric acid	7664-93-9	≤ 1
1,2,6-Trihydroxyhexane Hexanetriol-1,2,6; Hexane-1,2,6-triol	106-69-4	≤ 5
Tris 2-amino-2-(hydroxymethyl) propane-1,3-diol; trimethylolaminomethane	77-86-1	≤ 3
Methanol Methyl alcohol, Wood alcohol	67-56-1	~50

PHYSICAL DATA

Plastic kit containing small amounts of various liquids and powders.

HAZARDOUS REACTIVITY

Instability — Stable - Reactivity not expected with the product.

FIRE AND EXPLOSION DATA

Fire and Explosion Hazards	There is a fire and explosion hazard with this kit. 86°F (closed cup) TAG ASTW D-56 for 50% methanol.
Extinguishing Media	Use media appropriate for surrounding material.
Special Fire Fighting Instructions	Firefighters must wear appropriate protective clothing and self – contained breathing apparatus.

HEALTH HAZARD INFORMATION

Primary Route(s) of Exposure/Entry: Skin, Eyes and Mouth. Flush skin and eyes with large amounts of water. If sulfuric acid is ingested, do NOT induce vomiting. Seek prompt medical attention.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

Eye exposure to concentrated sulfuric acid solution may cause severe damage, often leading to blindness. Dilute solutions produce more transient effects from which recovery may be complete. Exposure to the mist causes eye irritation and lacrimation. Skin contact with sulfuric acid may cause severe irritation and pain, burns and vesiculation.

Sulfuric acid is corrosive and may cause severe burning pain in the throat, mouth and abdomen followed by vomiting and diarrhea. Asphyxia may occur from the swelling of the throat. Perforation of the esophagus and stomach may occur.

Methanol may be fatal if swallowed. Methanol may be harmful, if inhaled or absorbed through skin. Vapor or mist is irritating to eyes, mucous membranes, and respiratory tract. Skin contact with chemical may cause irritation. Methanol may also cause irritation / damage to kidneys and other gastrointestinal organs. May also cause convulsions.

Dimethylformamide (DMF) may cause abdominal pain, loss of appetite, nausea, vomiting, diarrhea, increased blood pressure, and liver injury, if inhaled. Contact with eyes or skin, may cause irritation. DMF may cause with prolonged or repeated skin contact, dermatitis with the systematic effects the same as if inhaled. If ingested, seek prompt medical attention.

The toxicological properties of the kit components have not been fully defined. Contact may cause irritation to eyes, skin, and mucous membranes. If inhaled or ingested, may cause irritation. Limit exposure to material.

Carcinogenicity: None of the components in this material is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Applicable Exposure Limits

Dimethylformamide
- OSHA / PEL: 10 ppm
- ACGIH /TLV: 10 ppm TWA 8 H, skin

Sulfuric acid
- OSHA/ PEL 1 mg/m^3
- ACGIH/TLV 1 mg/m^3

1,2,6-Trihydroxyhexane
- TXDS: orl-rat LD_{50} 15500 mg/kg
  ivn-rat LD_{50} 5600 mg/kg
  skn-rbt LD_{50} 20 gm/kg

Tris
- TXDS: orl-rat LD_{50} 5900 mg/kg
  ivn-mus LD_{50} 1210 mg/kg

Methanol
- OSHA/PEL 262 mg/m3
- ACGIH /TLV 262 mg/ m3
- TXDS: orl-rat LD_{50} 5628 mg/kg
  ihl-rat LC_{50} 64000 ppm/4H
  orl-mice LD_{50} 7300 mg/kg
  skn-rbt LD_{50} 15800 mg/kg

FIRST AID

Inhalation Remove from exposure. If irritation is evident, seek prompt medical attention.

Skin Contact The compound may cause irritation. If irritation occurs, flush skin with large amounts of water. Remove contaminated clothing and shoes, wash before reuse. If irritation persists, get medical attention.

Eye Contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Ingestion The compound is toxic by ingestion. If sulfuric acid is ingested, do NOT induce vomiting. Call a physician immediately.

PROTECTION INFORMATION

General Control Measures and Precautions: Ventilation - Natural ventilation.

Personal Protective Equipment:

Respiratory Protection: None normally required.

Protective Gloves: Are highly recommended.

Eye Protection: Safety glasses are required.

Other Protective Equipment: Lab coat or other long sleeved garment is required to limit skin exposure. Access to a safety shower and eyewash.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up.

Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Contain spill and collect in a suitable waste container. Avoid contact or materials with skin or eyes. Use adequate ventilation.

No special clean up practices are required.

Waste Disposal Dispose of as solid waste in accordance with any applicable federal, state, and local requirements.

SHIPPING INFORMATION

DOT	Proper Shipping Name	Not DOT regulated.
IATA/IMO	Proper Shipping Name	Not restricted.

TITLE III HAZARD CLASSIFICATION

Acute	No
Chronic	No
Fire	No
Reactivity	No
Pressure	No

REGULATORY INFORMATION

OSHA HAZARD DETERMINATION: This material is not known to be hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200

EPA DETERMINATIONS:
COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, & LIABILITY ACT (CERCLA/SUPERFUND), 40 CFR 302 - This material is not known to contain hazardous substances in sufficient quantity to make it subject to CERCLA regulations.

TOXIC SUBSTANCES CONTROL ACT (TSCA), 40 CFR 710
The material is a mixture as defined by TSCA. The chemical ingredients in this material are in the Section 8(b) Chemical Substance Inventory and/or are otherwise in compliance with TSCA. In the case of ingredients obtained from other manufacturers, Strategic Diagnostics, Inc. relies on the assurance of responsible third parties in providing this statement.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPARTS C AND D
The material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable or reactive according to U.S. EPA definitions (40 CFR 261). This material could also become a hazardous waste if it is mixed with or comes in contact with a listed hazardous waste. If it is a hazardous waste, regulations 40 CFR 262-266 and 268 may apply.

HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS, 49 CFR 171-178 - This material is not known to contain hazardous substances in sufficient quantity to make it subject to the Regulations.

FOREIGN REGULATIONS: CANADIAN HAZARDOUS PRODUCTS ACT (WHMIS)
The material is not a WHMIS Controlled Product.

STATE REGULATIONS:
CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 ("PROPOSITION 65")
The material is not known to contain any ingredients (s) subject to the Act.

PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT
This material is not known to contain any ingredient(s) subject to the Act. Non-hazardous ingredient(s) information is withheld as trade secret in accordance with Section 11 of the Pennsylvania Worker and Community Right to Know Act.

The above data are based on tests, experience, and other information which Strategic Diagnostics Inc. believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufacturers. In these instances, Strategic Diagnostics, Inc., in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, STRATEGIC DIAGNOSTICS INC. DISCLAIMS ANY LIABLITITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY STRATEGIC DIAGNOSTICS, INC. WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO STRATEGIC DIAGNOSTICS INC.

Responsibility for MSDS:

Strategic Diagnostics Inc.
111 Pencader Drive
Newark, DE 19702
(302) 456-6789

* End of MSDS *

Material Safety Data Sheet

Sample Extraction Kit
All except A00110EA / A00111EA

MATERIAL IDENTIFICATION

Manufacturer/Distributor:	Strategic Diagnostics Inc. 111 Pencader Drive Newark, DE 19702
Phone Number:	1-(302) 456-6789
Trade Names and Synonyms:	Sample Extraction Kit (3900000; 3900001)
NFPA Ratings	Health: 2 Flammability: 3 Reactivity: 0

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number	Weight Percent
Methanol Methyl alcohol, Wood alcohol, Carbinol, Methylol, Wood spirits	67-56-1	50 -100 %

PHYSICAL DATA

Plastic kit containing small amounts of various liquids and powders.

HAZARDOUS REACTIVITY

Instability — Stable - Reactivity not expected with the product.

FIRE AND EXPLOSION DATA

Fire and Explosion Hazards — There is a fire and explosion hazard with this material. The flash point of the material is 12°C (TCC) / NA (6.0 – 36.5%) for 100 % Methanol.

Extinguishing Media — Use alcohol foam, dry chemical, or carbon dioxide. (Water may be ineffective)

Special Fire Fighting Instructions — Do NOT attempt to extinguish fire unless spill flow can be stopped. Apply water as far a distance as possible. Applications of solid streams of water may spread fire. Fire fighters should wear protective equipment and self-contained breathing apparatus with full-face piece operated in positive pressure mode.

HEALTH HAZARD INFORMATION

Primary Route(s) of Exposure/Entry: Skin, Eyes and Mouth. Flush skin and eyes with large amounts of water for at least 15 minutes. If material is inhaled, remove to fresh air. If ingested, seek prompt medical attention.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:
Methanol is harmful and may be fatal if inhaled or ingested. Inhalation or ingestion of methanol may cause headache, nausea, vomiting, dizziness, narcosis, respiratory failure, low blood pressure, central nervous system depression, blindness, hearing loss or gastrointestinal irritation.
Prolonged skin contact with methanol may cause dermatitis. Short-term skin contact with methanol may

cause irritation. Methanol may also cause eye irritation and temporary corneal damage.
The toxicological properties of the kit components have not been fully defined. Contact may cause irritation to eyes, skin and mucous membranes. If inhaled or ingested, it may cause irritation. Limit exposure to material.

Carcinogenicity: None of the components in this material is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Applicable Exposure Limits

Methanol
OSHA/PEL 262 mg/m3
ACGIH /TLV 262 mg/ m3
TXDS: orl-rat LD_{50} 5628 mg/kg
ihl-rat LC_{50} 64000 ppm/4H
orl-mice LD_{50} 7300 mg/kg
skn-rbt LD_{50} 15800 mg/kg

FIRST AID

Inhalation No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary.

Skin Contact The compound is not likely to be hazardous by skin contact, but may cause irritation. If irritation continues, call a physician.

Eye Contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Ingestion The compound is toxic by ingestion. Call a physician.

PROTECTION INFORMATION

General Control Measures and Precautions: Ventilation - Natural ventilation.

Personal Protective Equipment:

Respiratory Protection: None normally required.

Protective Gloves: Are highly recommended.

Eye Protection: Safety glasses are required.

Other Protective Equipment: A lab coat or other long sleeved garment to limit skin exposure is required. Access to a safety shower and eyewash is required.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up.

Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up as well as a self-contained breathing apparatus.

Some specials clean up practices are required. Shut off ignition sources; no flares, smoking or flames in area. Stop leak if you can do so without risk. Use water spray to reduce vapors. Take up with sand or other non-combustible absorbent material and place into a suitable container for disposal. Flush area with water.

Waste Disposal Dispose of as solid waste in accordance with any applicable federal, state, and local requirements.

SHIPPING INFORMATION

DOT Proper Shipping Name Not DOT regulated.

IATA/IMO	Proper Shipping Name	Not restricted.

TITLE III HAZARD CLASSIFICATION

Acute	No
Chronic	No
Fire	No
Reactivity	No
Pressure	No

REGULATORY INFORMATION

OSHA HAZARD DETERMINATION: This material is not known to be hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200

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(INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY STRATEGIC DIAGNOSTICS, INC. WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO STRATEGIC DIAGNOSTICS INC.

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* End of MSDS *